# ASSESSMENT AND STRATEGY
# OF THE
# NORTH CAROLINA
# COASTAL MANAGEMENT PROGRAM

**FY 2021-2025**

**PERFORMED UNDER THE**
**COASTAL ZONE ENHANCEMENT GRANTS PROGRAM**

**SECTION 309**
**COASTAL ZONE MANAGEMENT ACT**

**May 29, 2020**
**Revised January 18, 2024**

This document consists of six major sections: (I) Introduction, (II) Summary of recent Section 309 achievements, (III) Program Assessment, (IV) Program Enhancement Strategy (FY 2016-2020), (V) Budget summary, (VI) Summary of Stakeholder and Public Involvement. It was prepared by the NC Division of Coastal Management based on guidance provided by the federal Office of Ocean and Coastal Resource Management (OCRM).

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**NORTH CAROLINA COASTAL MANAGEMENT PROGRAM**
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## I. INTRODUCTION

### North Carolina's Coastal Zone Management Program

North Carolina's Coastal Zone Management Program was federally approved in 1978 in response to passage of the federal Coastal Zone Management Act in 1972, which provides funds to coastal states to develop and administer coastal zone management programs. The Division of Coastal Management (DCM) works to protect, conserve and manage North Carolina's coastal resources through an integrated program of planning, permitting, education and research.

DCM carries out the State's Coastal Area Management Act (CAMA), the Dredge and Fill Law and the federal Coastal Zone Management Act in 20 coastal counties, using rules and policies developed by the NC Coastal Resources Commission (CRC). The division serves as staff to the CRC. DCM is an agency within the NC Department of Environmental Quality (DEQ), which is responsible for managing and protecting the State's natural resources.

DCM is responsible for several programs, including:

- Permitting and enforcement
- CAMA land-use planning
- Public beach and waterfront access
- North Carolina Coastal Reserves
- Clean Marinas

### Section 309 Coastal Zone Enhancement Grant Program in North Carolina

Section 309 of the Coastal Zone Management Act (CZMA), as amended in 1990, provides for a voluntary Coastal Zone Enhancement Grants Program to encourage states to develop program changes in one or more of nine specified enhancement areas: public access, coastal hazards, ocean resources, wetlands, cumulative and secondary impacts, marine debris, special area management planning, energy and government facility siting, and aquaculture. Under this program, coastal states conduct a detailed program assessment of these nine enhancement areas every five years, and as a result, identify high-priority areas for inclusion in a five-year strategic plan.

North Carolina's Section 309 Program was established in FY 1991-92 when DCM performed an initial assessment of North Carolina's Coastal Management Program pursuant to the CZMA. Since then, North Carolina has developed program assessments and strategies in 1997, 2001, 2006, 2010, and 2015.
For FY 2021-2025, DCM has completed this initial draft of its assessment of the State's coastal program and its five-year strategic plan. Utilizing the CZMA Section 309 Program Guidance document finalized by OCRM in June 2019, the Program Assessment and Strategy document was developed by DCM staff with

stakeholder review and input. After completing the initial Program Assessment, DCM reviewed the results to determine final program ratings, agree which programs should be included in the Strategy, and identify specific program changes and/or outcomes.
To solicit stakeholder input in the development of the FY2021-2025 Program Assessment and Strategy, DCM invited input on prioritizing among the nine program enhancement areas, and asked stakeholders what actions the DCM should take to make program improvements. The online survey was by invitation and was distributed electronically through DCM's Interested Parties List, and announcements were made and notices posted at CRC meetings. This distribution includes the majority of relevant stakeholders and private citizens with an interest in coastal management in the State (i.e., state, federal and local government agencies, academia, environmental groups, Coastal Resources Commission and Coastal Resources Advisory Council members, and citizens). The stakeholder input period was from September 12, 2019 through October 4, 2019. Stakeholder input is summarized in Section VI.

In addition to stakeholder input, DCM solicited public input on the draft FY2021-2025 Program Assessment and Strategy. DCM invited public review/comment and provided a link to its March 13, 2020 draft document through DCM's Interested Parties List and DCM's website located at http://www.nccoastalmanagement.net/. The public comment period was from March 13 through April 24, 2020, and eight public comments were received, in addition to feedback from NOAA OCM.

As a result of this process, DCM has identified **Coastal Hazards** and **Aquaculture** as the high priority enhancement areas that will drive the program enhancement strategy for FY 2021-2025.

## II. SUMMARY OF RECENT SECTION 309 ACHIEVEMENTS

North Carolina's 2016-2020 309 Strategy implements three program changes under the Coastal Hazards and enhancement area: 1) Delineation of Areas of Inlet Influence, 2) Evaluate Alternate Methodologies and Improve Calculation of Oceanfront Shoreline Change Rates, and 3) Develop a North Carolina Coastal Community Resilience Guide. The following is a summary of these program changes and related accomplishments.

### Coastal Hazards Strategy

1) Delineation of Areas of Inlet Influence

   Inlet Hazard Areas are coastal zones that are especially vulnerable to migration, erosion, flooding, and other adverse effects of sand, wind, and water because of their proximity to dynamic tidal inlets. Each of North Carolina's inlets is unique and there are distinct differences in the history and behavior of inlets in different coastal compartments of the state. North Carolina's existing Inlet Hazard Area (IHA) boundaries were adopted by the Coastal Resources Commission (CRC) in 1979 based on a 1978 study projected the landward-most shoreline position that would likely occur between 1978 and 1988. Therefore, 1988 represented the point in time where the statistical significance of the inlet shoreline trend predictions decreased. The Division of Coastal Management (DCM) collaborated extensively with the Science Panel from 2007 to 2010 in developing methodologies for updating the current IHA boundaries, and in

2010 the Science Panel proposed draft updated Inlet Hazard Area boundaries for the state's 12 developed inlets. The draft updated IHAs were not adopted by the Commission, and were deferred until 2014. At that time, the CRC asked the Science Panel to once again work collaboratively with NC DCM Staff in an effort to re-evaluate their initial proposal, and to include more recent data. In February 2019, the CRC approved draft IHA rule amendments and the Science Panel's proposed updated IHAs. In December 2019 and January 2020, staff held seven public hearings for the purpose of soliciting public comments, and five workshops to help stakeholders understand how the new IHAs were mapped and the differences between existing rules and boundaries, and the proposed amendments. The CRC will consider public comments and next steps at their April 2020 meeting.

2) Evaluate Alternate Methodologies and Improve Calculation of Oceanfront Shoreline Change Rates.

The Division of Coastal Management has used the "endpoint method" to calculate long-term average annual shoreline change rates since its first study in 1979. While the method has remained consistent, techniques used to map shorelines and calculate shoreline change rates have continually evolved with data accessibility and advances in mapping technology. Rates of change are measured in units of feet per year by dividing the distance between two shorelines on evenly spaced shore-perpendicular transects, by the time interval between them. This method was initially chosen because it was simple, inexpensive, recommended by the National Academy of Sciences, and because there were no techniques at that time which did not have serious computational flaws. Since 1979, the Division has updated oceanfront erosion rates approximately once every five years.

Measuring short-term changes rates can be difficult given the constant influences that wind and tide have on a shoreline's position. Without attention given to the variability a shoreline's position at any given hour or day, the potential exists for introducing a large degree of error. For this reason, a long-term method is used on the oceanfront to reduce measurement error by averaging it over the total time interval of the study. The longer the time interval between the early dates and most recent dates, the less error there is in the erosion rate. A fifty-year time interval was initially chosen as optimum because it is long enough to provide an acceptable level of data accuracy (+/-1 foot), and short enough to reflect significant changes both regional and local. DCM uses erosion rates for two purposes: 1) construction setbacks based on erosion rates and measured from the vegetation line, and; 2) defines the landward boundary of the Ocean Erodible Area of Environmental Concern by multiplying the setback factor times ninety, and measured landward from the vegetation line.

Recognizing a need for further improvements, the CRC Science Panel recommended in 1999 that the DCM should invest in acquiring more shoreline data and evaluate an alternative, or complementary, method(s) to analyze both short and long-term erosion. As a result of this recommendation, and with modern advances in GIS technology, the Division started an ongoing effort in 2002 to build a more robust oceanfront and inlet shoreline database. Initially, the Division proposed completing a study in 2020 that compared the end-point method of analyzing shoreline change, to alternative methodologies that included multiple shorelines. Due to

limited resources (staff and time) and efforts to complete the 2019 Inlet Hazard Area Boundary update, the Division is now proposing this study for the 2021-2025 309 Grant cycle. Once completed, Staff will present results to the CRC, and ask for guidance on using a new methodology, or continuing to use the end-point method.

3) Develop a North Carolina Coastal Community Resilience Guide

DCM, in collaboration with a diverse group of reviewers, developed a Coastal Adaptation and Resiliency portal that provides links to climate data and forecasts, assessment and planning tools, adaptation examples, and sources of funding for planning and implementation. It is geared primarily towards local government staff and other stakeholders interested in coastal resilience in North Carolina. https://deq.nc.gov/about/divisions/coastal-management/coastal-adaptation-and-resiliency. Again relying upon feedback from a diverse group of reviewers, DCM then developed a companion Resiliency Guide Storymap that is designed to walk users through some of the key steps and questions required for effective community-level resiliency planning. It sets out a process for building resilience and climate change considerations into existing efforts such as comprehensive land use, hazard mitigation, or capital improvement planning, while also focusing on other co-beneficial strategies for risk reduction. https://ncdenr.maps.arcgis.com/apps/MapSeries/index.html?appid=e2eb18546943471b93f0264659744a81. Both resources were eagerly anticipated, and are being showcased in presentations to local government, academic, and NGO audiences within the state. Both tools will be offered as resources for use by local governments under the technical assistance program that will be created under the 2021-2025 309 Strategy.

## III. ASSESSMENT

# Wetlands

**Section 309 Enhancement Objective:** Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands. §309(a)(1)

*Note: For the purposes of the Wetlands Assessment, wetlands are "those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." [33 CFR 328.3(b)]. See also pg. 174 of the CZMA Performance Measurement Guidance[1] for a more in-depth discussion of what should be considered a wetland.*

### PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states.)*

*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. Using provided reports from NOAA's Land Cover Atlas,[2] please indicate the extent, status, and trends of wetlands in the state's coastal counties. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico currently only has data for one time point so will not be able to report trend data. Instead, Puerto Rico should just report current land use cover for all wetlands and each wetlands type.

   Current state of wetlands in 2011 (acres): 2,563,408.4 **(28.6% of coastal area)**

**Coastal Wetlands Status and Trends**

| Coastal Wetlands Status and Trends | | |
|---|---|---|
| Percent net change in total wetlands (% gained or lost)* | from 1996-2011 | from 2006-2011 |
| | -1.07 | -0.11 |
| Percent net change in freshwater (palustrine wetlands) (% gained or lost)* | from 1996-2011 | from 2006-2011 |
| | -1.0 | -0.10 |

[1] https://coast.noaa.gov/czm/media/czmapmsguide2018.pdf

[2] https://coast.noaa.gov/digitalcoast/tools/lca.html. Note that the 2016 data will not be available for all states until later Summer 2019. NOAA OCM will be providing summary reports compiling each state's coastal county data. The reports will be available after all of the 2016 data is available.

| Percent net change in saltwater (estuarine) wetlands (% gained or lost)* | from 1996-2011 | from 2006-2011 |
|---|---|---|
| | 0.07 | -0.014 |

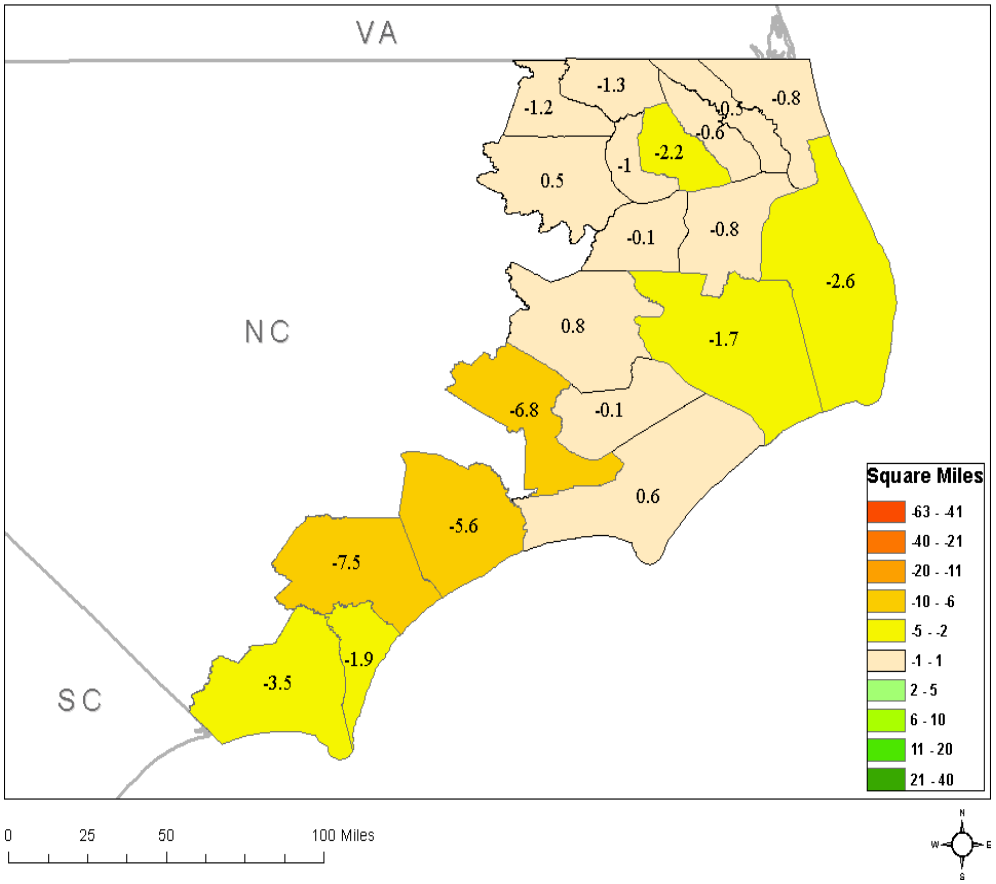
## How Wetlands Are Changing*

| Land Cover Type | Area of Wetlands Transformed to Another Type of Land Cover between 1996-2011 (Sq. Miles) | Area of Wetlands Transformed to Another Type of Land Cover between 2006-2011 (Sq. Miles) |
|---|---|---|
| Development | -6,332.0 | -2,115.9 |
| Agriculture | -5,581.2 | 1,619.9 |
| Barren Land | -2,912.7 | -1,383.7 |
| Water | -3,247.2 | 62.7 |

** Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in wetlands for the time period for which data are available. Puerto Rico does not report.*

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of coastal wetlands since the last assessment to augment the national datasets.

Net Wetland Change by County 1996-2010




**Management Characterization:**

1. Indicate if there have been any significant changes at the state or territory level (positive or negative) that could impact the future protection, restoration, enhancement, or creation of coastal wetlands since the last assessment.

## Significant Changes in Wetland Management

| Management Category | Significant Changes Since Last Assessment (Y or N) |
|---|---|
| Statutes, regulations, policies, or case law interpreting these | Y |
| Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition) | N |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

The CMP amended our 309 Strategy in 2013 to include a new program change for amending our estuarine shoreline management rules, specifically to streamline permitting for marsh sills (also referred to living shorelines) as an alternative to vertical bulkheads. Proposed regulatory changes were drafted in 2014, but put on hold in order to coordinate with the Army Corps of Engineers' reauthorization of their nationwide permit. The rulemaking was further delayed once the CMP and the Corps discovered that that the nationwide permit could not provide the desired streamlining, and a Corps regional general permit would be required instead. In early 2019, the CMP and the Corps each adopted the necessary permits, putting marsh sills on the same regulatory plane as bulkhead permits in terms of cost and processing time. North Carolina now has the quickest permitting process for "living shorelines" in the nation, and is already sharing our successful experience with other states. The CMP hopes that by simplifying and speeding up the process for getting a permit to build a marsh sill, they will over time become more commonly used than vertical bulkheads, increasing storm resilience and promoting intertidal habitat survival.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

**High** ___X___
**Medium** _____
**Low** _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

While the program remains a strong interest in the status and protection of coastal wetlands, no regulatory changes are seen as necessary in this period. The program accomplished a significant program change during the 2016-2020 period, amending our General Permit for living shorelines and coordinating with USACE on their new Regional General Permit. Permitting for marsh sills is now the quickest in the nation, and these structures will allow for both marsh restoration and shoreline protection. In addition, the program will continue to offer educational and training events to promote the use of living shorelines, and will continue to conduct and support marsh monitoring and restoration research. Most stakeholders recommended that wetlands be a high priority, suggesting for example the creation of special area management plans to identify marsh migration corridors. This is a very timely recommendation, and the program may consider a Project of Special Merit application in the future to investigate opportunities to integrate migration areas into the state's "Areas of Environmental Concern" system.

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## Coastal Hazards

**Section 309 Enhancement Objective:** Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change. §309(a)(2)

*Note: For purposes of the Hazards Assessment, coastal hazards include the following traditional hazards and those identified in the CZMA: flooding; coastal storms (including associated storm surge); geological hazards (e.g., tsunamis, earthquakes); shoreline erosion (including bluff and dune erosion); sea level rise; Great Lake level change; land subsidence; and saltwater intrusion.*

### PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states.)*

*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards. The following resources may help assess the level of risk for each hazards. Your state may also have other state-specific resources and tools to consult. Additional information and links to these resources can be found in the "Resources" section at the end of the Coastal Hazards Phase I Assessment Template:
    - The state's multi-hazard mitigation plan.
    - Coastal County Snapshots: Flood Exposure
    - Coastal Flood Exposure Mapper
    - Sea Level Rise Viewer/Great Lakes Lake Level Change Viewer
    - National Climate Assessment

## General Level of Hazard Risk in the Coastal Zone

| Type of Hazard | General Level of Risk[3] (H, M, L) |
|---|---|
| Flooding (riverine, stormwater) | H |
| Coastal storms (including storm surge) | H |
| Geological hazards (e.g., tsunamis, earthquakes) | L |
| Shoreline erosion | H/M |
| Sea level rise | H/M |
| Great Lakes level change | NA |
| Land subsidence | M/L |
| Saltwater intrusion | M/L |
| Other (please specify) | |

2. If available, briefly list and summarize the results of any additional data or reports on the level of risk and vulnerability to coastal hazards within your state since the last assessment. The state's multi-hazard mitigation plan or climate change risk assessment or plan may be a good resource to help respond to this question.

   As required under Gov. Roy Cooper's Executive Order 80[4] the State is developing a Climate Risk Assessment and Resiliency Plan[5], due to be complete by June 1, 2020. The plan will include actions that cabinet agencies can take to make our own programs and operations more resilient to climate change impacts. As a part of the plan, the State produced a Climate Science Report[6] as a "scientific assessment of historical climate trends and potential future climate change in North Carolina under increased greenhouse gas concentrations." The report includes updated information on historic and projected climate-driven coastal hazards, and shows that the coast remains highly vulnerable to hazards including nuisance flooding and sea level rise.

**Management Characterization:**

1. In the tables below, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred that could impact the CMP's ability to prevent or significantly reduce coastal hazards risk since the last assessment.

## Significant Changes in Hazards Statutes, Regulations, Policies, or Case Law

[3] Risk is defined as "the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage." *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*

[4] https://files.nc.gov/governor/documents/files/EO80-%20NC%27s%20Commitment%20to%20Address%20Climate%20Change%20%26%20Transition%20to%20a%20Clean%20Energy%20Economy.pdf

[5] https://deq.nc.gov/energy-climate/climate-change/nc-climate-change-interagency-council/climate-change-clean-energy-0

[6] https://ncics.org/programs/nccsr/

| Topic Addressed | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Elimination of development/redevelopment in high-hazard areas[7] | N | N | N |
| Management of development/redevelopment in other hazard areas | Y | Y | Y |
| Climate change impacts, including sea level rise or Great Lakes level change | N | NA | N |

**Significant Changes in Hazards Planning Programs or Initiatives**

| Topic Addressed | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Hazard mitigation | Y | Y | Y |
| Climate change impacts, including sea level rise or Great Lakes level change | Y | Y | Y |

**Significant Changes in Hazards Mapping or Modeling Programs or Initiatives**

| Topic Addressed | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Sea level rise or Great Lakes level change | Y | Y | Y |
| Other hazards | | | |

2. Briefly state how "high-hazard areas" are defined in your coastal zone.

   The NCCMP no longer has a High Hazard Flood area of environmental concern, but 15A NCAC 7H .0301 defines "Ocean Hazard Categories" as natural areas along the Atlantic Ocean shoreline where, because of their special vulnerability to erosion or other adverse effects of sand, wind, and water, uncontrolled or incompatible development could unreasonably endanger life or property. Ocean hazard areas include beaches, frontal dunes, inlet lands, and other areas in which geologic, vegetative and soil conditions indicate a substantial possibility of excessive erosion or flood damage.

3. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
   a. Describe the significance of the changes;
   b. Specify if they were 309 or other CZM-driven changes; and
   c. Characterize the outcomes or likely future outcomes of the changes.

[7] Use state's definition of high-hazard areas.

The NCCMP developed and released two online resources to help local governments and understand the science of climate change and sea level rise, and to identify tools for self-assessments and stakeholder engagement, to review adaptation strategies and funding mechanisms, and to investigate actions that have been taken in other jurisdictions. Both online resources were developed under the CMP's 2011-2015 309 Strategy. The NCCMP produced a Sea Level Rise Assessment Report in 2015, releasing the final draft in 2016 following an extensive public comment period. For the first time, the 2015 report was able to project ranges of sea level rise for different regions of the coast, a significant downscaling from the statewide projections released in 2010.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

   **High** X
   **Medium** _____
   **Low** _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   In the wake of a series of powerful storms that have devastated parts of the North Carolina coast in recent years, there is greater State and local attention being paid to coastal hazards, especially changing conditions, than there has been previously. The magnitude of the devastation, in human, environmental and economic costs, has resulted in a desire to be better prepared and more resilient to storms, flooding, and sea level rise. Environmental NGO stakeholders are encouraging the CMP to prioritize Hazards Enhancement Area, particularly for seeking opportunities to restore and improve natural infrastructure defenses and habitat.

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## Public Access

**Section 309 Enhancement Objective:** Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value. §309(a)(3)

### PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states.)*

*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. Use the table below to provide data on public access availability within the coastal zone.

**Public Access Status and Trends**

| Type of Access | Current number[8] | Changes or Trends Since Last Assessment[9] (↑, ↓, –, unkwn) | Cite data source |
|---|---|---|---|
| Beach access sites | Over 569 | ↑ 144 | NCCMP Access Web Map |
| Shoreline (other than beach) access sites | Over 229 | Unknown | NCCMP Access Web Map |
| Recreational boat (power or nonmotorized) access sites | Over 146 | ↑ 46 | NCCMP Access Web Map |
| Number of designated scenic vistas or overlook points | Over 163 | Unknown | NCCMP Access Web Map |
| Number of fishing access points (i.e. piers, jetties) | Over 23 | Unknown | Google Earth, Local gov'ts. |
| Coastal trails/ boardwalks *(Please indicate number of trails/boardwalks and mileage)* | Unknown | Unknown | NA |

[8] Be as specific as possible. For example, if you have data on many access sites but know it is not an exhaustive list, note "more than" before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

[9] If you know specific numbers, please provide. However, if specific numbers are unknown but you know that the general trend was increasing or decreasing or relatively stable or unchanged since the last assessment, note that with a ↑ (increased), ↓ (decreased), – (unchanged). If the trend is completely unknown, simply put "unkwn."

| Type of Access | Current number[8] | Changes or Trends Since Last Assessment[9] (↑, ↓, –, unkwn) | Cite data source |
|---|---|---|---|
| Number of acres parkland/open space | Unknown | Unknown | NA |
| Access sites that are Americans with Disabilities Act (ADA) compliant[10] | Over 206 | Unknown | NCCMP Access Web Map |
| Other (please specify) | | | |

2. Briefly characterize the demand for coastal public access and the process for periodically assessing demand. Include a statement on the projected population increase for your coastal counties. There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan,[11] the National Survey on Fishing, Hunting, and Wildlife Associated Recreation,[12] and your state's tourism office.

   The CMP issues an annual Coastal Area Management Act Public Beach and Water Access Grant Program request for funding. Local governments from the twenty coastal counties have the opportunity to request grant funds for public access projects. In the last five years, the requests have well exceeded the one million dollars in available grant funds.

   According to North Carolina's 2015 Statewide Comprehensive Outdoor Recreation Plan (SCORP) the most popular recreation activity is visiting a beach or lake. The population within the state's twenty coastal counties is projected to increase by 26 percent between 2018 and 2038 (North Carolina OSBM, 2018).

   Based on the popularity of beach for recreation activities, the projected increase in population, and the fact that funding requests far exceed available funding it is anticipated that there will be an increase in the demand for coastal water and beach access.

3. If available, briefly list and summarize the results of any additional data or reports on the status or trends for coastal public access since the last assessment.

[10] For more information on ADA see *www.ada.gov*.
[11] Most states routinely develop "Statewide Comprehensive Outdoor Recreation Plans", or SCROPs, that include an assessment of demand for public recreational opportunities. Although not focused on coastal public access, SCORPs could be useful to get some sense of public outdoor recreation preferences and demand. Download state SCROPs at*www.recpro.org/scorp-library*.
[12] The National Survey on Fishing, Hunting, and Wildlife Associated Recreation produces state-specific reports on fishing, hunting, and wildlife associated recreational use for each state. While not focused on coastal areas, the reports do include information on saltwater and Great Lakes fishing, and some coastal wildlife viewing that may be informative and compares 2016 data to 2011, 2006 and 2001 information to understand how usage has changed. See www.wsfrprograms.fws.gov/subpages/nationalsurvey/national_survey.htm

In 2017, UNCW competed a study of the Public Access Program *NC's Public Beach and Coastal Waterfront Access Program: An Investigation, Analysis, Assessment and Evaluation of the Program's Success*. The study provided DCM with a comprehensive look at the success and importance of the Public Access Program as perceived by local business leaders, local government officials and the public who uses the access sites. Conclusions and recommendations from the study are as follows:

- The Division of Coastal Management should definitely continue the Public Access Program AND consider seeking additional program funding.
- Study results indicate there should be a shift in program emphasis from land acquisition for new sites to improvements to existing sites, especially for restrooms, showers and parking.
- Study results confirm a desire for additional Soundside/River/Creek Access Sites as a high priority followed by Downtown Waterfront sites and Ocean Beach access sites
- DCM should provide additional funding for improved maintenance of existing access sites as well as additional access opportunities to persons with disabilities (ADA accessible restrooms)

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could impact the future provision of public access to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.

**Significant Changes in Public Access Management**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Statutes, regulations, policies, or case law interpreting these | Y | Y | N |
| Operation/maintenance of existing facilities | N | N | N |
| Acquisition/enhancement programs | Y | Y | N |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

3. Indicate if your state or territory has a publically available public access guide. How current is the publication and how frequently it is updated?[13]

**Publically Available Access Guide**

| Public Access Guide | Printed | Online | Mobile App |
|---|---|---|---|
| State or territory has? (Y or N) | N | Y | N |
| Web address (if applicable) | - | Coastalaccess.nc.gov | - |
| Date of last update | - | July 2019 | - |
| Frequency of update | - | Monthly | - |

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

**High** _____
**Medium** x
**Low** _____

Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Public access to coastal waters impacts not only the state and local government's economies, but also the cultural is historical character of the region. There has been an increased demand for estuarine access for both recreational and commercial uses, as indicated through access grant requests. The projected population forecasts further emphasize the need to provide public access and associated amenities to meet future demands. Stakeholder input selected public access as the highest priority enhancement area. Despite the increasing demand and projected population increase, the CMP is not well positioned to secure a meaningful program change for this enhancement area. At present, the CMP's primary responsibility is in conducting an annual grant competition for funds that are appropriated by the General Assembly for the access program. Funding averages about $1,000,000 per year from the N.C. Parks & Recreation Trust Fund. Two stakeholders encouraged the CMP to designate Public Access as a priority, recommending that the CMP continue to do what we are currently doing.

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[13] Note some states may have regional or local guides in addition to state public access guides. Unless you want to list all local guides as well, there is no need to list additional guides beyond the state access guide. You may choose to note that the local guides do exist and may provide additional information that expands upon the state guides.

# Marine Debris

**Section 309 Enhancement Objective:** Reducing marine debris entering the nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris. §309(a)(4)

**PHASE I (HIGH-LEVEL) ASSESSMENT:** *(Must be completed by all states.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. In the table below, characterize the existing status and trends of marine debris in the state's coastal zone based on the best-available data.

**Existing Status and Trends of Marine Debris in Coastal Zone**

| Source of Marine Debris | Significance of Source (H, M, L, unknwn) | Type of Impact[14] (aesthetic, resource damage, user conflicts, other) | Change Since Last Assessment (↑, ↓, –, unkwn) |
|---|---|---|---|
| Beach/shore litter | H | Aesthetic, resource damage, economic, accessibility | ↑ |
| Land-based dumping | H | Aesthetic, resource damage, economic, accessibility | ↑ |
| Storm drains and runoff | H | Aesthetic, resource damage, economic, accessibility | ↑ |
| Land-based fishing (e.g., fishing line, gear) | M | Aesthetic, resource damage, economic, accessibility | - |
| Ocean/Great Lakes-based fishing (e.g., derelict fishing gear) | L | Resource damage | - |
| Derelict vessels | M | Resource damage & accessibility issues | ↑ |
| Vessel-based (e.g., cruise ship, cargo ship, general vessel) | L | Economic | - |
| Hurricane/Storm | H | Aesthetic, resource damage, economic, accessibility | ↑ |
| Tsunami | NA | | |

| | | | |
|---|---|---|---|
| Other (please specify) | | | |

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from marine debris in the coastal zone since the last assessment.

   Based on data received from the North Carolina International Coastal Cleanup it appears that the total amount of trash picked up from 2017 to 2018 has declined. Data from after Hurricane Florence has not been compiled but it is expected to be higher than previous years.

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) for how marine debris is managed in the coastal zone.

[14] You can select more than one, if applicable.

**Significant Changes in Marine Debris Management**

| Management Category | Employed by State/Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Marine debris statutes, regulations, policies, or case law interpreting these | Y | Y | N |
| Marine debris removal programs | Y | Y | N |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes and likely future outcomes of the changes.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

    **High** _____
    **Medium** x
    **Low** _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

    The NCCMP continues to be concerned about marine debris, but has no regulatory authority to address it. The NCCMP is involved with marine debris through participating in the leadership team of the N.C. Marine Debris Assessment and Action Plan and engaging in the development of the Southeast Regional Marine Debris Action Plan coordinated by the NOAA Marine Debris Program. The NCCMP coordinates the NC Clean Marina, Clean Boater, and Marina Pumpout grant programs.

    Stakeholders have been engaged throughout the process of developing the N.C. Marine Debris Assessment and draft Action Plan. Much of the stakeholder input included suggestions that are outside of CAMA jurisdiction. Other input, provided by a coastal protection non-profit, included the NCCMP addressing storm debris generated by the damage or destruction of shoreline structures such as docks. Input was also received through NCCMP's involvement in post-hurricane response activities to respond to displaced vessels. It was suggested that the NCCMP develop materials to notify the owners of vessels displaced in sensitive habitats, that special removal procedures may be required to protect wetland habitats. This strategy was implemented by the NCCMP.

    Additionally, the NCCMP's N.C. Coastal Reserve and National Estuarine Research Reserve is involved in marine debris research, removal, and education and has led or partnered on two projects that

were funded by the NOAA Marine Debris Program. Stakeholders involved in multiple marine debris committees felt that it would be a good option for education and outreach, to include information about the Marine Debris Tracker in the NC Clean Boater Guide. The Marine Debris Tracker was developed through a partnership of the NOAA Marine Debris Program and the Southeast Atlantic Marine Initiative (SEA-MDI). This was completed during the revision and printing done in June 2019.

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## Cumulative and Secondary Impacts

**Section 309 Enhancement Objective:** Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources. §309(a)(5)

**PHASE I (HIGH-LEVEL) ASSESSMENT:** *(Must be completed by all states.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. Using National Ocean Economics Program Data on population and housing,[15] please indicate the change in population and housing units in the state's coastal counties between 2012 and 2017. You may wish to add additional trend comparisons to look at longer time horizons as well (data available back to 1970), but at a minimum, please show change over the most recent five-year period data is available (2012-2017) to approximate current assessment period.

**Trends in Coastal Population and Housing Units**

| | 2012 | 2017 | Percent Change (2012-2017) |
|---|---|---|---|
| Number of people | 1,015,499 | 1,062,535 | 4.63% |
| Number of housing units | 531,046 | 563,947 | 6.20% |

[15] www.oceaneconomics.org/Demographics/PHresults.aspx. Enter "Population and Housing" section and select "Data Search" (near the top of the left sidebar). From the drop-down boxes, select your state, and "all counties." Select the year (2012) and the year to compare it to (2017). Then select "coastal zone counties."

2. Using provided reports from NOAA's Land Cover Atlas,[16] please indicate the status and trends for various land uses in the state's coastal counties between 1996 and 2010. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period that the data represent. Also note that Puerto Rico currently only has data for one time point so will not be able to report trend data. Instead, Puerto Rico should just report current land use cover for developed areas and impervious surfaces.

**Distribution of Land Cover Types in Coastal Counties**

| Land Cover Type | Land Area Coverage in 2010 (Square miles) | Gain/Loss Since 2006 (Square miles) |
|---|---|---|
| Developed, High Intensity | 69.25 | 6.6 |
| Developed, Low Intensity | 236.15 | 10.41 |
| Developed, Open Space | 178.64 | 48.62 |
| Grassland | 334.57 | -49.48 |
| Scrub/Shrub | 959.74 | 216.32 |
| Barren Land | 181.84 | 0.76 |
| Open Water | 4573.44 | 0.69 |
| Agriculture | 2050.5 | -35.17 |
| Forested | 1450.39 | -176.09 |
| Woody Wetland | 3282.14 | -54.28 |
| Emergent Wetland | 677.34 | 51.06 |

3. Using provided reports from NOAA's Land Cover Atlas,[17] please indicate the status and trends for developed areas in the state's coastal counties between 2006 and 2010 in the two tables below. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico currently only has data for one time point so will not be able to report trend data. Unless Puerto Rico has similar trend data to report on changes in land use type, it should just report current land use cover for developed areas and impervious surfaces.

**Development Status and Trends for Coastal Counties**

(square miles)

| | 2006 | 2010 | Net Change |
|---|---|---|---|
| Percent land area developed | 448.41 | 484.04 | 35.63 |
| Percent impervious surface area | Not available | Not available | 8.97 |

** Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in development and impervious surface area for the time period for which data are available. Puerto Rico does not need to report trend data.*

[16] www.coast.noaa.gov/digitalcoast/tools/lca.html. Note that the 2016 data will not be available for all states until later Summer 2019. NOAA OCM will be providing summary reports compiling each state's coastal county data. The reports will be available after all of the 2016 data is available.

[17] www.coast.noaa.gov/digitalcoast/tools/lca.html. Note that the 2016 data will not be available for all states until later Summer 2019. NOAA OCM will be providing summary reports compiling each state's coastal county data. The reports will be available after all of the 2016 data is available.

## How Land Use Is Changing in Coastal Counties

| Land Cover Type | Areas Lost to Development Between 2006-2011 (Square Miles) |
|---|---|
| Barren Land | 0.76 gained |
| Emergent Wetland | 51.06 gained |
| Woody Wetland | 54.28 lost |
| Open Water | 0.69 gained |
| Agriculture | 35.17 lost |
| Scrub/Shrub | 216.32 gained |
| Grassland | 49.48 lost |
| Forested | 176.09 lost |

4. Briefly characterize how the coastal shoreline has changed in the past five years due to development, including potential changes to shoreline structures such as groins, bulkheads and other shoreline stabilization structures, and docks and piers. If available, include quantitative data from permitting databases or other resources about changes in shoreline structures.

   Since Land Cover Atlas data are only available through 2010, the CMP is unable to characterize shoreline changes over the past ten years. Anecdotally, new start development appears to have rebounded from the recession based on the trend in permit fee receipts over the past decade.

5. Briefly summarize the results of any additional state- or territory-specific data or reports on the cumulative and secondary impacts of coastal growth and development, such as water quality, shoreline hardening, and habitat fragmentation, since the last assessment.

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state-level changes (positive or negative) in the development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources, since the last assessment.

## Significant Changes in Management of Cumulative and Secondary Impacts of Development

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Statutes, regulations, policies, or case law interpreting these | Y | N | N |
| Guidance documents | Y | N | N |
| Management plans (including SAMPs) | Y | N | N |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

| | |
|---|---|
| **High** | _____ |
| **Medium** | X |
| **Low** | _____ |

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   The CMP maintains a consistent interest in cumulative and secondary impacts, but did not pursue any deliberate steps in this area during the 2011-2015 period. Four stakeholders recommended this area be made a priority, but the CMP does not have sufficiently compelling data to justify the prioritization of this enhancement area.

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## Special Area Management Planning

**Section 309 Enhancement Objective:** Preparing and implementing special area management plans for important coastal areas. §309(a)(6)

The Coastal Zone Management Act defines a special area management plan (SAMP) as "a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making."

**PHASE I (HIGH-LEVEL) ASSESSMENT:** *(Must be completed by all states and territories.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will*

*help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. In the table below, identify geographic areas in the coastal zone subject to use conflicts that may be able to be addressed through a SAMP. This can include areas that are already covered by a SAMP but where new issues or conflicts have emerged that are not addressed through the current SAMP.

| Geographic Area | Opportunities for New or Updated Special Area Management Plans |
|---|---|
| | Major conflicts/issues |
| Ocean Hazard & Inlet Areas | Coastal development; storm hazards; sudden and chronic shoreline changes; land alteration affecting the barrier island system; beach nourishment; setbacks; grandfathering |
| Coastal & Freshwater Wetlands | Coastal development; physical alteration; nonpoint source pollution, effects of shoreline hardening; sea level rise |
| Estuarine Waters | Coastal development; point & nonpoint pollution; precipitation patterns |
| Public Trust Waters | Competition from residential, industrial, commercial interests for access to and use of public trust resources |
| Estuarine Shorelines | Functional degradation; capacity to buffer adjacent waters from runoff; stabilization/erosion control; development pressure |
| Closed, highly productive shellfish waters | Uncontrolled development or development with high densities/intensities resulting in major or irreversible damage |
| Public Water Supplies | Development within watershed or wellfield boundaries; salt water intrusion; drought; population growth |
| State Ports & Surrounding Areas | Dredging; sediment disposal; increasing ship draft requiring deeper channels; scarcity of dredges forcing dredging during ecologically sensitive times |

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of SAMPs since the last assessment.

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could help prepare and implement SAMPs in the coastal zone.

**Significant Changes in Special Area Management Planning**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| SAMP policies, or case law interpreting these | N | NA | NA |
| SAMP plans | N | NA | NA |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

    **High** _____
    **Medium** X
    **Low** _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

    Given the existing use management tools applied in North Carolina, including the statutorily-created AEC framework, the CMP has not to date found the SAMPs to be a high priority. Two stakeholders supported making this enhancement area a high priority, but did not provide any specific recommendations.

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## Ocean and Great Lakes Resources

**Section 309 Enhancement Objective:** Planning for the use of ocean [and Great Lakes] resources. §309(a)(7)

**PHASE I (HIGH-LEVEL) ASSESSMENT:** *(Must be completed by all states and territories.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will*

*help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. Understanding the ocean and Great Lakes economy can help improve management of the resources it depends on. Using Economics: National Ocean Watch (ENOW),[18] indicate the status of the ocean and Great Lakes economy as of 2015 (the most recent data) in the tables below. Include graphs and figures, as appropriate, to help illustrate the information. Note ENOW data are not available for the territories. The territories can provide alternative data, if available, or a general narrative, to capture the value of their ocean economy.

**Status of Ocean and Great Lakes Economy for Coastal Counties (2016)**

| | All Ocean Sectors | Living Resources | Marine Construction | Ship & Boat Building | Marine Transportation | Offshore Mineral Extraction | Tourism & Recreation |
|---|---|---|---|---|---|---|---|
| Employment (# of Jobs) | 50,980 | 3,965 | 657 | 1,966 | 1,723 | 123 | 42,544 |
| Establishments (# of Establishments) | 3,159 | 233 | 87 | 78 | 112 | 15 | 2,634 |
| Wages (Millions of Dollars) | 936.9 | 57.7 | 31 | 86.4 | 58.1 | 3.7 | 700 |
| GDP (Millions of Dollars) | 2,500 | 253.9 | 61 | 560.1 | 124 | 9.2 | 1,500 |

**Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2016)[19]**

| | All Ocean Sectors | Living Resources | Marine Construction | Ship & Boat Building | Marine Transportation | Offshore Mineral Extraction | Tourism & Recreation |
|---|---|---|---|---|---|---|---|
| Employment (# of Jobs) | 7,542 | 461 | -265 | -2,563 | -579 | -1 | 10,489 |
| Establishments (# of Establishments) | 876 | 70 | -1 | 1 | 26 | -2 | 782 |
| Wages (Millions of Dollars) | 243.6 | 33.1 | 3.7 | -67.3 | -24.2 | 3.1 | 298 |
| GDP (Millions of Dollars) | 947.5 | 108.9 | .2 | 185.7 | -51.8 | 1 | 703.5 |

[18] www.coast.noaa.gov/digitalcoast/tools/enow.html. If you select any coastal county for your state, you are directed to various data displays for that county, In the upper left of the screen, click the "State" box, to the left of the county box so that the state name will be highlighted. Now the data will reflect statewide data for all of the state's coastal counties. Make sure "2015" is selected for the year (top right corner). You can then click through the sector types by selecting the icons along the top and the type of economic data (employment, wages, GDP, etc), by clicking through the icons on the left.

[19] The trend data is available at the bottom of the page for each sector and type of economic data. Mouse over the data points for 2005 and 2015 to obtain the actual values and determine the change by subtracting 2005 data from 2015.

2. Understanding existing uses within ocean and Great Lakes waters can help reduce use conflicts and minimize threats when planning for ocean and Great Lakes resources. Using Ocean Reports[20], indicate the number of uses within ocean or Great Lakes waters off of your state. For energy uses (including pipelines and cables, see the "Energy and Government Facility Siting" template following). Add additional lines, as needed, to include additional uses that are important to highlight for your state. Note: The Ocean Reports tool does not include data for the Great Lakes states. Great Lakes states should fill in the table as best they can using other data sources.

**Uses within Ocean or Great Lakes Waters**

| Type of Use | Number of Sites |
|---|---|
| Federal sand and gravel leases *(Completed)* | 2 |
| Federal sand and gravel leases *(Active)* | 1 |
| Federal sand and gravel leases *(Expired)* | 0 |
| Federal sand and gravel leases *(Proposed)* | 1 |
| Beach Nourishment Projects | 35 |
| Ocean Disposal Sites | 168 |
| Principal Ports *(Number and Total Tonnage)* | 2 principal ports. 8,055,819 tons. |
| Coastal Maintained Channels | 138 |
| Designated Anchorage Areas | 2 |
| Danger Zones and Restricted Areas | 6 |
| Unexploded Ordnances | 12 |
| Formerly Used Defense Sites | 25 |
| Known Wrecks and Obstructions | 162 |
| Aquaculture operations | 236 |

3. In the table below, characterize how the threats to and use conflicts over ocean and Great Lakes resources in the state's or territory's coastal zone have changed since the last assessment.

**Significant Changes to Ocean and Great Lakes Resources and Uses**

[20] *www.coast.noaa.gov/digitalcoast/tools/ort.html*. Go to "Quick Reports" and select the "state waters" option for your state or territory. Some larger states may have the "Quick Reports" for their state waters broken into several different reports. Use the icons on the left hand side to select different categories: general information, energy and minerals, natural resources and conservation, oceanographic and biophysical, transportation and infrastructure, and economics and commerce. Then scroll through each category to find the data to complete the table.

| Resource/Use | Change in the Threat to the Resource or Use Conflict Since Last Assessment (↑, ↓, –, unkwn) |
|---|---|
| Benthic habitat (including coral reefs) | - |
| Living marine resources (fish, shellfish, marine mammals, birds, etc.) | ↑ |
| Sand/gravel | ↑ |
| Cultural/historic | Unknown |
| Transportation/navigation | ↑ |
| Offshore development[21] | - |
| Energy production | ↑ |
| Fishing (commercial and recreational) | ↑ |
| Recreation/tourism | - |
| Dredge disposal | ↑ |
| Aquaculture (offshore) | – |

4. For the ocean and Great Lakes resources and uses in the table above that had an increase in threat to the resource or increased use conflict in the state's or territory's coastal zone since the last assessment, characterize the major contributors to that increase. Place an "X" in the column if the use or phenomenon is a major contributor to the increase.

**Major Contributors to an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources**

| | Land-based development | Offshore development | Polluted runoff | Fishing (Comm/Rec) | Aquaculture | Marine Transportation | Dredging | Sand/Mineral Extraction | Other (Specify) |
|---|---|---|---|---|---|---|---|---|---|
| Living resources (fish, shellfish, marine mammals, birds, etc.) | *x* | *x* | | *x* | | | | | |
| Sand/gravel | | | | | | | *x* | *x* | |
| Transportation/navigation | | | | | | | *x* | | |
| Energy production | | | | *x* | | | | | *Seismic; leasing* |
| Fishing (comm. and rec.) | | | | *x* | | | | | |
| Dredge disposal | | | | | | | | | *Timing; capacity* |
| Aquaculture (offshore) | | | | | | | | | |

5. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of ocean and Great Lakes resources or threats to those resources since the last assessment to augment the national data sets.

[21] Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the "energy production" category.

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if any significant state- or territory-level changes (positive or negative) in the management of ocean and Great Lakes resources have occurred since the last assessment?

**Significant Changes to Management of Ocean and Great Lakes Resources**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Statutes, regulations, policies, or case law interpreting these | Y | Y | N |
| Regional comprehensive ocean/Great Lakes management plans | N | - | - |
| State comprehensive ocean/Great Lakes management plans | N | - | - |
| Single-sector management plans | Y | N | N |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

3. Indicate if your state or territory has a comprehensive ocean or Great Lakes management plan.

| Comprehensive Ocean/Great Lakes Management Plan | State Plan | Regional Plan |
|---|---|---|
| Completed plan (Y/N) (If yes, specify year completed) | N | N |
| Under development (Y/N) | N | N |
| Web address (if available) | - | - |
| Area covered by plan | - | - |

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

**High** _____
**Medium** _____
**Low** X

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   While the CMP has observed limited increases in threats and use conflicts in ocean resources, there have not been any significant changes in this enhancement area since the last period that would warrant the development of a 5-year strategy. Stakeholder comments supporting a high priority referred to offshore energy and submerged aquatic vegetation, both of which are ongoing subject matter areas within other parts of the NCCMP.

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## Energy and Government Facility Siting

**Section 309 Enhancement Objective:** Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance. §309(a)(8)22

**PHASE I (HIGH-LEVEL) ASSESSMENT:** *(Must be completed by all states and territories.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. In the table below, characterize the status and trends of different types of energy facilities and activities in the state's or territory's coastal zone based on best-available data. If available, identify the approximate number of facilities by type. For ocean-facing states and territories (not Great Lakes states), Ocean Reports23 includes existing data for many of these energy facilities and activities.

[22] CZMA § 309(a)(8) is derived from program approval requirements in CZMA § 306(d)(8), which states:

> "The management program provides for adequate consideration of the national interest involved in planning for, and managing the coastal zone, including the siting of facilities such as energy facilities which are of greater than local significance. In the case of energy facilities, the Secretary shall find that the State has given consideration to any applicable national or interstate energy plan or program."

NOAA regulations at 15 C.F.R. § 923.52 further describe what states need to do regarding national interest and consideration of interests that are greater than local interests.

**Status and Trends in Energy Facilities and Activities in the Coastal Zone**

| Type of Energy Facility/Activity | Exists in Coastal Zone (# or Y/N) | Change in Existing Facilities/Activities Since Last Assessment (↑, ↓, –, unkwn) | Proposed in Coastal Zone (# or Y/N) | Change in Proposed Facilities/Activities Since Last Assessment (↑, ↓, –, unkwn) |
|---|---|---|---|---|
| Pipelines | N | - | N | - |
| Electrical grid (transmission cables) | Y | unknown | N | unknown |
| Ports | Y | N | - | Y |
| Liquid natural gas (LNG) | N | - | N | N |
| Other (please specify) | | | | |
| Oil and gas | N | - | N | Y |
| Coal | N | N | N | - |
| Nuclear | Y | N | - | - |
| Wind | Y | N | Y | Y |
| Wave | N | - | N | - |
| Tidal | N | - | N | - |
| Current (ocean, lake, river) | N | - | N | - |
| Hydropower | N | - | N | - |
| Ocean thermal energy conversion | N | - | N | - |
| Solar | Y | unknown | N | - |
| Biomass | N | - | N | - |
| Other (please specify) | | | | |

2. If available, briefly list and summarize the results of any additional state- or territory-specific information, data, or reports on the status and trends for energy facilities and activities of greater than local significance in the coastal zone since the last assessment.

   On October 10, 2016, DCM found BOEM's Federal Consistency Determination for the Kitty Hawk Wind Energy Area (WEA) Lease and Approved Site Assessment Activities consistent with North Carolina's approved enforceable policies, contingent upon the fulfillment of BOEM's coordination requirement with DCM and DMF prior to the approval of any site assessment plan. A Federal Consistency Determination may be submitted to DCM for a Site Assessment Plan and potentially a Construction and Operation Plan of the Kitty Hawk WEA during the 2021-2025 strategy period. Additionally, North Carolina may be included in the 2019-2024 National OCS Oil and Gas Leasing

[23] *www.coast.noaa.gov/digitalcoast/tools/ort.html*. Select "Quick Reports" and then enter your state. Select the Quick Reports for "coastal waters" off of your state. Depending on the size of the state, there may be more than one "coastal waters". If so, you will need to add the data from all reports to complete the table. Click on the wind turbine icon on the left ("Energy and Minerals") for information on energy facilities. While outside your coastal zone, you may also want to consider facilities/activities in "Federal Waters" that may have effects on your coastal zone.

Program, if so, then Federal Consistency could play an important role for coordination with the State and BOEM for the 2021-2025 strategy period.

3. Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance[24] in the state's coastal zone since the last assessment.

   The state's coastal zone continues to be a significant military use area with five active military installations located along the coast. There has not been any significant change in the status or trends of these facilities or activities over the past five years.

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) that could facilitate or impede energy and government facility siting and activities have occurred since the last assessment.

**Significant Changes in Energy and Government Facility Management**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Statutes, regulations, policies, or case law interpreting these | y | N | N |
| State comprehensive siting plans or procedures | N | N | N |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
   a. Describe the significance of the changes;
   b. Specify if they were 309 or other CZM-driven changes; and
   c. Characterize the outcomes or likely future outcomes of the changes.

   On September 8, 2016 NOAA OCM approved the CRC's Coastal Energy Policies (15A NCAC 07H.0106, 07H .0208, 07H .0309, and 07M .0400) as enforceable policies, thereby allowing these rules to be applied in Federal Consistency determinations for offshore Energy proposals.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

[24] The CMP should make its own assessment of what Government facilities may be considered "greater than local significance" in its coastal zone, but these facilities could include military installations or a significant federal government complex. An individual federal building may not rise to a level worthy of discussion here beyond a very cursory (if any at all) mention).

**High** _____
**Medium** X
**Low** _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   Pursuant to recent state law, the CMP has a limited role in government and energy facility siting and does not anticipate a need for additional program changes in this enhancement area. The CMP will be involved in coordination of the placement of offshore Wind Energy and Oil and Gas leasing, exploration, and development through the Federal Consistency process. Two stakeholders support making this enhancement area a high priority, and recommend that the CMP continue to do the things we have been doing.

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# Aquaculture

**Section 309 Enhancement Objective:** Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable states to formulate, administer, and implement strategic plans for marine aquaculture. §309(a)(9)

**PHASE I (HIGH-LEVEL) ASSESSMENT:** *(Must be completed by all states and territories.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. In the table below, characterize the existing status and trends of aquaculture facilities in the state's coastal zone based on the best-available data. Your state Sea Grant Program may have information to help with this assessment.[25]

| Type of Facility/Activity | Status and Trends of Aquaculture Facilities and Activities | | |
|---|---|---|---|
| | # of Facilities[26] | Approximate Economic Value | Change Since Last Assessment (↑, ↓, –, unkwn) |

[25] While focused on statewide aquaculture data rather than just within the coastal zone, the *Census of Aquaculture* (*www.agcensus.usda.gov/Publications/Census_of_Aquaculture/)* may help in developing your aquaculture assessment. The census is conducted every 10 years and the last report was released in 2013. The report provides a variety of state-specific aquaculture data to understand current status and recent trends. .

[26] Be as specific as possible. For example, if you have specific information of the number of each type of facility or activity, note that. If you only have approximate figures, note "more than" or "approximately" before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

| | | | |
|---|---|---|---|
| Terrestrial facility | Approx. 60 | Unknown | - |
| Shellfish leases, bottom only | 224 | Unknown | ↑ 50 (28.7% increase) (174 existed in 2016) |
| Franchises | 51 | Unknown | - |
| Shellfish Leases with Water Columns | 79 | Unknown | ↑ 54 (216% increase) (25 existed in 2016) |
| Under dock oysters | 36 | Unknown | ↑ 26 (260% increase) (10 existed in 2016) |

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from aquaculture activities in the coastal zone since the last assessment.

   North Carolina saw a significant increase in aquaculture activities since the last assessment, specifically with respect to water column leases. The CMP has been in ongoing coordination with the N.C. Division of Marine Fisheries to evaluate the steady increase in aquaculture applications and the proper way to manage this activity. Additionally, the N.C. Shellfish Mariculture Advisory Committee submitted a N.C. Strategic Plan for Shellfish Mariculture to N.C. General Assembly and the North Carolina Policy Collaboratory on December 30, 2018. This strategic plan outlines a vision for industry development, identifies marketing and promotional needs, recommends efficient regulatory structures, proposes statutory changes, and addresses research needs.

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any state- or territory-level changes (positive or negative) that could facilitate or impede the siting of public or private aquaculture facilities in the coastal zone.

**Significant Changes in Aquaculture Management**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Aquaculture comprehensive siting plans or procedures | N | N | N |
| Other aquaculture statutes, regulations, policies, or case law interpreting these | Y | N | Y |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

a. Describe the significance of the changes;
b. Specify if they were 309 or other CZM-driven changes; and
c. Characterize the outcomes or likely future outcomes of the changes.

Session Law 2019-37, Authorize Establishment of Shellfish Aquaculture Enterprise Areas, made several changes to the NC shellfish leasing program, including authorizing the Secretary to establish large-scale leases and shellfish enterprise areas. The bill not, however, attempt to resolve the CMP's statutory obligation to regulate development activity such as the pilings often used to support water column gear, or floating upweller systems that could violate the CMP's floating structure policy (15A NCAC 7M .0600). The CMP has been coordinating the Division of Marine Fisheries in the review of shellfish lease applications, to ensure that they are informed about the potential need for a development permit, and that navigation and coastal wetlands are adequately protected.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

| | |
|---|---|
| **High** | x |
| **Medium** | |
| **Low** | |

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   The CMP needs to develop a streamlined permitting approach for aquaculture leases, so that applications that propose minimal gear and development within the public trust are not forced to go through the lengthy and more expensive major permitting process. While the Division of Marine Fisheries has the primary regulatory oversight related to aquaculture activities in the State, and the CMP will continue to partner on siting decisions, enterprise areas, gear use, any overall strategy for marine aquaculture. Two stakeholders support making this enhancement area a priority, recommending that aquaculture leasing be continued, with appropriate protections for navigation and water quality.

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**Phase II (In-Depth) Assessment**

## Wetlands

**In-Depth Resource Characterization:**
*Purpose: To determine key problems and opportunities to improve the CMP's ability to protect, restore, and enhance wetlands.*

1. What are the three most significant existing or emerging physical stressors or threats to wetlands within your coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout your coastal zone, or are there specific areas that are most threatened? Stressors can be development/fill; hydrological alteration/channelization; erosion; pollution; invasive species; freshwater input; sea level rise/Great Lakes level change; or other (please specify). When selecting significant stressors, also consider how climate change may exacerbate each stressor.

| | **Stressor/Threat** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Stressor 1 | Development | Throughout the coastal zone |
| Stressor 2 | Sediment supply | Throughout the coastal zone |
| Stressor 3 | Sea level rise | Throughout the coastal zone |

The NCCMP places a high value on coastal wetlands due to their essential ecosystem and resilience services. While coastal wetlands are protected by law and regulation, the CMP lacks current data at the necessary scale to accurately understand the scale and distribution of coastal wetland losses and gains across the coastal zone. Information provided by one key stakeholder points to 10,000 acres of "prior converted cropland" that have recently been restored to coastal wetlands, and recommends the use of 12-digit hydrologic units as a more informative measure of wetland change.

2. Briefly explain why these are currently the most significant stressors or threats to wetlands within your coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   While adequate data are not readily available to comprehensively analyze the scale and distribution of impacts of these stressors, the CMP is aware of research and reports that list these as among the most common stressors to coastal wetlands. The N.C. Division of Water Resources, for example, states that activities such as agriculture, mining, logging/forestry, bridge construction, industrial/commercial development, housing development, road construction, and others can have temporary and/or permanent effects on wetlands. The N.C. Division of Marine Fisheries identifies ditching and draining, and shoreline stabilization, as among the development-related stressors. Sea level rise, driven by climate change, is frequently cited as both a direct stressor and as a force that magnifies other stresses.

3. Are there emerging issues of concern but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

| Emerging Issue | Information Needed |
|---|---|
| Migration/transgression space and pathways | Geospatial analysis of space and pathways; legal and policy analysis |
| Coastal wetlands losses/gains in distribution and function | Updated status and trends assessments of distribution, size, and functionality |

**In-Depth Management Characterization:**

*Purpose: To determine the effectiveness of management efforts to address identified problems related to the wetlands enhancement objective.*

1. For each additional wetland management category below that was not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

**Significant Changes in Wetland Management**

| Management Category | Employed By State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Wetland assessment methodologies | Y | N | N |
| Wetland mapping and GIS | Y | N | N |
| Watershed or special area management plans addressing wetlands | N | N | N |
| Wetland technical assistance, education, and outreach | Y | Y | Y |
| Living shorelines permitting | Y | N | Y |

2. For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.

   a. Describe significant changes since the last assessment;
   The CMP convened a stakeholder group consisting of federal and state regulatory and resource management agencies, researchers, and NGOs to devise a faster process for permitting routine living shoreline projects. The CMP and the U.S. Army Corps were able to jointly develop respective general permits that reduces permit processing time to about one week, the same as bulkheads and other routine development projects. The CMP, through our NERR Coastal Training Program, has developed and delivered numerous living shorelines trainings to marine contractors, real estate professionals, property owners, and other interested parties, to convey best practices and the pros and cons of

different stabilization options.

b. Specify if they were 309 or other CZM-driven changes; and
The significant changes described above were driven by recommendations within the CMP's February 2014 Living Shorelines Strategy.

c. Characterize the outcomes or likely future outcomes of the changes.
The main outcomes of these changes include a much quicker process for permitting routine living shoreline projects, removing a regulatory hurdle that had made them slower and sometimes more expensive to obtain than bulkhead permits. The CMP hopes that this will encourage more property owners to opt for living shorelines over vertical bulkheads, where appropriate. The education and outreach activities have helped increase awareness about living shorelines, as well as best construction practices to ensure successful installations.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in protecting, restoring, and enhancing coastal wetlands since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's or territory's management efforts?

   One limited study sponsored by the CMP showed that fringing marsh waterward of vertical bulkheads tend to shrink over time. Conversely, several studies demonstrate the effectiveness of living shorelines in marsh growth. Academic partners have been working with the CMP to evaluate the effectiveness of living shorelines for shoreline protection and marine life recruitment, and on comparative studies of living shorelines versus bulkhead performance and damages during storm events. Since these management measures are relatively recent, more time may be needed before their effectiveness can be detected and understood.

**Identification of Priorities:**

1. Considering changes in wetlands and wetland management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively respond to significant wetlands stressors. *(Approximately 1-3 sentences per management priority.)*

   *Management Priority 1: <u>Identify strategies to mitigate "coastal squeeze" and drowning.</u>*
   *Description: Coastal wetlands can be caught between a rising sea and hardened shoreline, resulting in drowning and loss. Inadequate sediment and detritus supply can also cause marshes to be unable to keep up with rising sea levels, resulting in conversion from wetlands to mud flats. The CMP is interested in strategies to mitigate squeeze and drowning, including expanded use of living shorelines, restoration, thin layer placement, and preserving migration/transgression opportunities.*

   *Management Priority 2: <u>Updated status and trends assessments of distribution, size, and functionality.</u>*
   *Description: The types and impacts of stressors need to be better understood, along with updated georeferenced data on losses and gains. Wetland functions—ecosystem and socioeconomic services—*

*also need be better understood.*

2. Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

| Priority Needs | Need? (Y or N) | Brief Explanation of Need/Gap |
|---|---|---|
| Research | Y | Updated coastal wetlands status and trends—losses and gains—by hydrologic unit if possible. Strategies, opportunities and barriers to migration/transgression. |
| Mapping/GIS | Y | Updated coastal wetlands distribution, with ability to analyze status and trends—losses and gains—by hydrologic unit if possible. Migration/transgression pathways. |
| Data and information management | Y | Georeferenced data on losses and gains. Quantification of wetland functions—ecosystem and socioeconomic services. |
| Training/capacity building | N | |
| Decision-support tools | Y | Suitability analysis; identification and prioritization of protection, restoration, and migration areas. |
| Communication and outreach | N | |
| Other (specify) | | |

**Enhancement Area Strategy Development:**

1. Will the CMP develop one or more strategies for this enhancement area?

**Yes** __X___
**No** _____

Briefly explain why a strategy will or will not be developed for this enhancement area.

The CMP believes that additional data are necessary in order to appropriately quantify the scope and scale of coastal wetlands changes. The NCCMP will work with partners to devise a strategy and protocol to map areas within North Carolina where coastal wetlands are at risk of drowning and may be suitable candidate sites for Thin Layer Placement (TLP). TLP is when material (dredged sediment) is intentionally placed on a wetland to increase its elevation while maintaining the hydrology and inundation duration necessary for native wetland vegetation to persist. TLP is an emerging technique in North Carolina for the purpose of coastal wetland restoration or as an enhancement strategy. Mapping suitable areas where TLP is appropriate will contribute to the success of coastal wetland restoration.

## Coastal Hazards

**In-Depth Resource Characterization:**
*Purpose: To determine key problems and opportunities to improve the CMP's ability to prevent or significantly reduce coastal hazard risks by eliminating development and redevelopment in high-hazard areas and managing the effects of potential sea level rise and Great Lakes level change.*

1. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards[27] within the coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone or are specific areas most at risk?

| | **Type of Hazard** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Hazard 1 | Flooding | Throughout coastal zone, exacerbated by sea level rise |
| Hazard 2 | Storms & storm surge | Throughout coastal zone, especially in FEMA V zones |
| Hazard 3 | Shoreline erosion | Throughout coastal zone, especially near inlets |

2. Briefly explain why these are currently the most significant coastal hazards within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   Flooding from precipitation, storm surge, and king tides, amplified by sea level rise, has become a more frequent and damaging hazard in recent years. Storm floods are typically geographically limited, but devastating events. Sea level rise, by contrast, is a gradual but significant hazard that affects the entire coast. Unlike storm flooding, sea level rise does not recede. Sea level rise intensifies other coastal hazards such as flooding, storm surge, shoreline erosion, and shoreline recession. Sea level rise can also pose a threat to freshwater resources and quality, private property and development, tourism and economic vitality, historic and cultural resources, agriculture, forestry, and public property and infrastructure. While uncertainties exist in future projections, continued or accelerated sea level rise is expected to intensify the challenges that the state faces in protecting public trust resources, including the estuarine system, coastal sounds and inlets, and barrier dune systems and beaches. Proactive adaptation and resilience building to storm flooding and sea level rise can help to minimize economic, property and natural resource losses, minimize social disruption and losses to public trust areas and access, and lessen the need for disaster recovery spending.

   Oceanfront erosion remains a challenge for much of the NC coast, particularly adjacent to dynamic inlets where erosion control measures (e.g. sandbags, dune reconstruction, terminal groins) are most commonly utilized. Beach nourishment is also more prevalent now than it was just a decade ago, and beneficial placement of beach-quality dredged material has become a higher priority. The NCCMP routinely analyzes and reports oceanfront erosion rates, and uses the historic rates for siting oceanfront development. The CMP has just begun calculating inlet erosion rates, and will continue to pursue program enhancements in this area.

3. Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

| Emerging Issue | Information Needed |
|---|---|
| Securing sand supplies for increasing storm damage reduction projects | Inventory of beach-quality sand reserves (location and quantity) |
| | |

Due to increasing demand for beach nourishment, there is a corresponding need to identify necessary sand resources. The CMP has been partnering on a number of efforts to inventory data on existing sources, and identify new potential sources of sand. Federal partners including NOAA, the Bureau of Ocean Energy Management, and the Army Corps of Engineers, are engaged in various efforts to identify potential sources, including the Frying Pan Shoals off of Cape Fear. The Southeast Coastal Ocean Observing Regional Association (SECOORA) has a data mapping portal that can house data produced by the various projects.

**In-Depth Management Characterization:**
*Purpose: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.*

1. For each coastal hazard management category below, indicate if the approach is employed by the state or territory and if there has been a significant change since the last assessment.

| Management Category | **Employed by State/Territory** (Y or N) | **CMP Provides Assistance to Locals that Employ** (Y or N) | **Significant Change Since the Last Assessment** (Y or N) |
|---|---|---|---|
| **Statutes, Regulations, and Policies:** | | | |
| *Shorefront setbacks/no build areas* | Y | Y | Y |
| *Rolling easements* | N | N | N |
| *Repair/rebuilding restrictions* | Y | Y | Y |
| *Hard shoreline protection structure restrictions* | Y | Y | N |
| *Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)* | Y | Y | Y |
| *Repair/replacement of shore protection structure restrictions* | Y | Y | Y |
| *Inlet management* | Y | Y | Y |
| *Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)* | Y | Y | N |

| | | | |
|---|---|---|---|
| *Repetitive flood loss policies (e.g., relocation, buyouts)* | N | N | N |
| *Freeboard requirements* | Y | N | N |
| *Real estate sales disclosure requirements* | N | N | N |
| *Restrictions on publicly funded infrastructure* | N | N | N |
| *Infrastructure protection (e.g., considering hazards in siting and design)* | N | N | N |
| *Other (please specify)* | | | |
| **Management Planning Programs or Initiatives:** | | | |
| *Hazard mitigation plans* | Y | N | N |
| *SLR or climate change adaptation plans* | N | Y | Y |
| *Statewide requirement for local post-disaster recovery planning* | N | N | N |
| *Sediment management plans* | Y | Y | N |
| *Beach nourishment plans* | Y | Y | Y |
| *Special Area Management Plans (that address hazards issues)* | N | N | N |
| *Managed retreat plans* | N | N | N |
| *Other (please specify)* | | | |
| **Research, Mapping, and Education Programs or Initiatives:** | | | |
| *General hazards mapping or modeling* | Y | Y | Y |
| *Sea level rise mapping or modeling* | N | N | N |
| *Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)* | Y | Y | Y |
| *Hazards education and outreach* | Y | Y | Y |
| *Other (please specify)* | | | |

2. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's management efforts in addressing coastal hazards since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's management efforts?

   The state's Climate Risk Assessment and Resiliency Plan, required under Governor Cooper's Executive Order 80 (2018), is scheduled for completion by the end of March 2020, and will include a discussion of how the CMP can help local governments to build climate hazards resilience. The CMP views local climate hazards resilience as a priority that is not being adequately addressed by any other agency, and is proposing to partner with the Office of Recovery and Resiliency to design a program to help local governments plan for, and integrate resilience measures into their existing plans. The CMP is not aware of any other studies that have been completed since the last assessment that illustrate the effectiveness of the state's management efforts in addressing coastal hazards.

**Identification of Priorities:**

*1.* Considering changes in coastal hazard risk and coastal hazard management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively address the most significant hazard risks. *(Approximately 1-3 sentences per management priority.)*

*Management Priority 1: _Combined delineation of barrier island erosion hazards.*

Description: North Carolina's existing Inlet Hazard Area (IHA) boundaries were adopted by the Coastal Resources Commission (CRC) in 1979 based on a study of inlet shoreline changes over time. The CMP has been in the process of updating the IHA boundaries and erosion rates during the 2015-2020 Assessment and Strategy period, employing a new methodology for curvilinear shorelines, and amending the use standards within these areas. The IHA assessment and long-term average erosion rates study for the Ocean Erodible Area (OEA) were completed in quick succession, but using different methodologies for calculating erosion rates. The CMP believes that it will be possible in the 2021-2025 period to combine the IHA and OEA studies using a single erosion rate methodology, producing a seamless erosion rate snapshot, and opportunities to further enhance use standards.

*Management Priority 2: _Technical assistance program to support local resiliency efforts.*

Description: The CMP proposes to create a program to build local capacity for climate resilience. The program will incentivize and reward communities for meeting defined standards for vulnerability assessments, long-term planning, preparedness and community engagement, and help them to prepare shovel-ready projects in order to capitalize on federal and state funding opportunities. The CMP will learn from other states that have created similar programs, such as Massachusetts and Rhode Island. The CMP will encourage communities to integrate resiliency planning into existing planning requirements, such as capital improvements, economic development, hazard mitigation, and comprehensive or land use plans. One of the required planning elements will be to identify strategies and projects to protect, enhance, and restore natural infrastructure, which can provide flood protection, ecosystem, and economic benefits.

2. Identify and briefly explain priority needs and information gaps the CMP has for addressing the management priorities identified above. The needs and gaps identified here should not be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

| **Priority Needs** | **Need?** (Y or N) | **Brief Explanation of Need/Gap** |
|---|---|---|
| Mapping/GIS/modeling | Y | Comparison of methodologies for calculating shoreline erosion rates. |
| Training/Capacity building | Y | Resiliency training/capacity building for state & local government, and navigating state & federal mandates and regulations. |

| | | |
|---|---|---|
| Decision-support tools | Y | Tools to: improve decision-making for development type and location in support of enhanced resilience; determine community vulnerability and risk exposure; and perform cost-benefit analyses. |
| Communication and outreach | Y | Resiliency outreach and education for coastal residents. |
| Other (Specify) | | |

NOAA OCM has a number of training, capacity building, and decision-support tools that will be valuable resources, including Adaptation Planning for Coastal Communities, Coastal Inundation Mapping, Nature-Based Solutions for Coastal Hazards, Sea Level Rise Viewer, Coastal Flood Exposure Mapper, and various risk communication trainings.

**Enhancement Area Strategy Development:**

1. Will the CMP develop one or more strategies for this enhancement area?
   **Yes** Y
   **No** _____

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

   The CMP will develop a strategy for this enhancement area because North Carolina is one of the three states most impacted by, and vulnerable to, coastal hazards such as storms, coastal flooding, beach erosion, and sea level rise. North Carolina has suffered through several deadly and costly events in recent years, and the state needs to become more prepared for the next big storms than it was for the hurricanes of 2016-2019. North Carolina also has high social and economic vulnerability, and needs to do better at building human and environmental capacity to adapt to the changing climate, particularly at the local community level. This lack of capacity is costly in economic, environmental, and most importantly, in human terms.

## Aquaculture

**In-Depth Resource Characterization:**

*Purpose: To determine key problems and opportunities for facilitating the siting of aquaculture facilities in the coastal zone.*

1. What are the three most significant existing or emerging challenges to facilitating the siting of aquaculture facilities within the coastal zone? Indicate the geographic scope of the challenge, i.e., is

it prevalent throughout the coastal zone or are specific areas most threatened? Challenges can be conflicting uses; coastal resource impacts; coordinating regulatory processes or review; insufficient data; natural disasters; or other (please specify). When selecting significant challenges, also consider how climate change may exacerbate each challenge.

| | **Challenges** | **Geographic Scope**<br><br>(throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Challenge 1 | CMP lacks streamlined rules for simple lease plans | Throughout coastal zone, with the exception of limited areas under legislative moratoria on leasing. |
| Challenge 2 | CMP lacks a mechanism to permit certain types of aquaculture gear | Throughout coastal zone, with the exception of limited areas under legislative moratoria on leasing. |
| Challenge 3 | Inefficient interagency review and permitting process | Throughout coastal zone, with the exception of limited areas under legislative moratoria on leasing. |

2. Briefly explain why these are currently the most significant challenges to facilitating the siting of aquaculture facilities in the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   The State of North Carolina has provided for the private use of public trust waters for the production of shellfish by the cultivation of unproductive bottom by allowing this bottom to be leased to residents of North Carolina since 1858. Shellfish bottom lease and water column applications are accepted from March 1 through September 30 every year, and site investigations are conducted between April 1 and October 31 to coincide with the growing season for submerged aquatic vegetation. After Division of Marine Fisheries (DMF) completes their necessary reviews, the applications are circulated to the CMP for an evaluation of whether CMP permits are required. The additional step of circulating all applications to the CMP extends the total review time, extending the time for the applicant to receive a final decision.

   DMF, a sister agency to the CMP within the Department of Environmental Quality, is the lead agency for processing applications and issuing leases. Traditional bottom leases have required little to no gear in the water—seed clams and cultch material were applied directly to the bottom and harvested when they reached market size. With the growing popularity of water column leases, lease holders are using more gear, e.g. pilings, that meet the statutory definition of “development” thus requiring an additional permit from the CMP. In addition, there are certain types of gear gaining in popularity, e.g. floating upweller systems, which the CMP may currently permit only in designated marinas, but most shellfish leases are in open water, not in designated marinas.

   Finally, while the state has authorized the establishment of aquaculture enterprise zones, a siting

strategy has not yet been developed for enterprise zones or regular leases. The CMP and DMF have begun discussions with Dr. James Morris at the National Centers for Coastal Ocean Science about using tools within the Coastal Aquaculture Planning Portal (CAPP) to perform siting analyses for leases within different waterbodies.

3. Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

| Emerging Issue | Information Needed |
|---|---|
| Appropriate sites for enterprise zones | Ecological and social suitability |
| Cumulative impact of multiple leases in the same waterbody, or in close proximity | Ecological impacts |

**In-Depth Management Characterization:**

*Purpose: To determine the effectiveness of management efforts to address identified problems related to the aquaculture enhancement objective.*

1. For each additional aquaculture management category below that was not already discussed as part of the Phase I assessment, indicate if it is employed by the state and if significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

**Significant Changes to Aquaculture Management**

| Management Category | Employed by the State (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Aquaculture research, assessment, monitoring | N | N | N |
| Aquaculture GIS mapping/database | Y | N | N |
| Aquaculture technical assistance, education, and outreach | N | N | N |

| Management Category | Employed by the State (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Other (please specify) | | | |

2. For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.
    a. Describe significant changes since the last assessment;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts to facilitate the siting of aquaculture facilities since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's or territory's management efforts?

**Identification of Priorities:**

*1.* Considering changes in aquaculture activities, the management of these activities since the last assessment, and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve the effectiveness of its management effort to better respond to the most significant aquaculture challenges. *(Approximately 1-3 sentences per management priority.)*

*Management Priority 1: _Speed up the process for CMP coordination on lease applications; consider general permit or permit exemption for routine projects with minimal gear.*

*Description: The CMP could develop a rapid-issue general permit for a limited amount of gear within a bottom or water column lease, and/or create a permit exemption for leases with minimal gear or user conflicts.*

*Management Priority 2: _Resolve permitting conflicts between CMP rules and industry-standard gear such as floating upweller systems.*

*Description: Floating upweller systems are used to promote rapid shellfish growth during the intermediate life stage, by using electric pumps to draw water up and force it through baskets filled with shellfish, sitting in wells in a floating platform. The CMP's law and policy categorizes these platforms as "floating structures" that are only allowed in a designated marina, or for 30 consecutive days in a non-marina location. Due to the need for electricity to run the pumps, floating upweller systems are more conveniently located adjacent to the shoreline; however, since solar power has already been proposed, the CMP believes that a mechanism to allow the use of floating upweller systems in open waters would be beneficial.*

2. Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

   The identified management priorities are policy decisions that do not require additional data or information.

| **Priority Needs** | **Need?** (Y or N) | **Brief Explanation of Need/Gap** |
|---|---|---|
| Research | N | |
| Mapping/GIS | N | |
| Data and information management | N | |
| Training/Capacity building | N | |
| Decision-support tools | N | |
| Communication and outreach | N | |
| Other (specify) | | |

**Enhancement Area Strategy Development:**

1. Will the CMP develop one or more strategies for this enhancement area?

**Yes** X
**No** _____

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

   A strategy will be developed for this enhancement area because promoting shellfish aquaculture has grown in recent years to become a state priority. Legislation has been enacted to enable the industry, and lease applications are experiencing rapid growth—the number of water column leases has more than tripled in the last five years. The CMP needs to remain involved to fulfill its statutory responsibilities, since the high-growth water column leases are typically the ones that employ gear requiring permits from the CMP. The CMP needs to work with DMF to clarify roles and a permitting framework that best serves applicants while fulfilling statutory obligations.

**IV. PROGRAM ENHANCEMENT STRATEGY**

**Strategy Title: Coastal Hazards**

## Program Change 1: *Combined delineation of barrier island erosion hazards.*

***I. Issue Area***

The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy & Government Facility Siting
- ☒ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

***II. Program Change Description***

***A.*** The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☒ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☐ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☐ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☐ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

**B. Description:**

The CMP will review the best available methodologies for calculating ocean and inlet shoreline change rates, and will use the most appropriate methodology to update both the state's long-term annual oceanfront shoreline change rates, and the inlet hazard area boundaries and erosion rates, as a single effort. The updated rates will be incorporated into the CRC's rules by reference to the final report.

The CMP has used the "end-point method" to calculate long-term average annual shoreline change rates since its first study in 1979. While the method has remained consistent, techniques used to map shorelines and calculate shoreline change rates have continually evolved with data accessibility and advances in mapping technology. Rates of change are measured in units of feet per year by dividing the distance between two shorelines on evenly spaced shore-perpendicular transects, by the time interval between them. This method was initially chosen because it was simple, inexpensive, recommended by the National Academy of Sciences, and because there were no other techniques at that time which did

not have serious computational flaws. The CMP uses oceanfront and inlet shoreline change rates to site construction setback lines and calculate the landward boundary of the Ocean Erodible Area of Environmental Concern (AEC).

Measuring short-term change rates can be difficult given the constant influences that wind and tide have on a shoreline's position. Without attention given to the variability a shoreline's position at any given hour or day, the potential exists for introducing a large degree of error. For this reason, a long-term method is used on the oceanfront to reduce measurement error by averaging it over the total time interval of the study. The longer the time interval between the early dates and most recent dates, the less error there is in the erosion rate. A fifty-year time interval was initially chosen as optimum because it is long enough to provide an acceptable level of data accuracy (+/-1 foot), and short enough to reflect significant changes both regional and local. To further reduce error, raw change rates are smoothed to reduce the effects of localized anomalies such as cusps. For oceanfront shorelines, this process uses a "17-point running average;" meaning that each transect's smoothed rate is averaged with eight transects on either side. For management purposes, smoothed rates are then "blocked" by grouping contiguous transects of similar values.

Recognizing a need for further improvements, the CRC's Science Panel recommended in 1999 that the CMP should invest in acquiring more shoreline data and evaluate alternative, or complementary, methods to analyze both short and long-term erosion. As a result of this recommendation, and with advances in GIS technology, the CMP started an ongoing effort in 2002 to build a more robust oceanfront shoreline database.

In 2010, the CMP compared two technologies AMBUR (Analyzing Moving Boundaries Using R) and USGS's DSAS (Digital Shoreline Analysis System) in preliminary inlet erosion rate studies. Given the same shorelines and transects, both DSAS and AMBUR will generate the same basic statistical output. Like DSAS, AMBUR uses a "baseline and transect" method as the fundamental technique for quantifying distances and rates of shoreline movement to detect classification changes across time. This means that transects are cast from a baseline, or reference line, that generally follow the trend of all shorelines. Baseline orientation is important because it serves as the basis for the analysis by casting transects within defined parameters to best capture accurate shoreline movement. Unlike DSAS, AMBUR uses two baselines, an inner (landward of shorelines or onshore) and an outer (seaward of shorelines or offshore) from which to cast and orient transects based on user preferences, and to remove extraneous arcuate features which can cause transects to be cast in unfavorable orientations.

The CMP will use a shoreline analysis tool like DSAS or AMBUR in conjunction with ESRI's ArcGIS to evaluate alternative methodologies for calculating oceanfront and inlet erosion rates. Some advantages of using a method like linear regression over end-point is that; 1) all data points are used in the rate calculation, thereby reducing the influence of spurious data points; (2) linear regression is an easily understood statistical analysis; and (3) summary and related statistical techniques are available to test and measure the quality of the straight-line fit, and to estimate the variance of the data.

### *III. Need(s) and Gap(s) Addressed*

The overall goal of this program change is to improve continued management of North Carolina's oceanfront by evaluating an alternative method for calculating shoreline change rates, and to use the

best available method to update the State's long-term average shoreline change rates in both the IHA and OEA. This program change addresses needs and gaps related to GIS mapping and modeling, decision-support tools, and data & information management. Tasks that will be performed in pursuance of this program change include:

- Evaluate methods like linear regression as an alternative methodology to end-point for calculating oceanfront erosion rates.

- Calculate new shoreline change rates and setback factors to be used to site oceanfront development construction lines.

- Update Erosion Rate rules (15A NCAC 7H .0304(1)(a). This will result in a change in the CRC's jurisdictional boundaries for development permitting.

***IV. Benefit(s) to Coastal Management***

The primary reasons for calculating long-term erosion rates are to establish regulatory construction setbacks for oceanfront construction that account for the erosion hazard, and to provide information to property owners about the potential risk associated with shoreline change. With new data, alternative statistical methodologies, and advances in mapping technology, comes a better understanding of hazards along the oceanfront, more effective science-based policy, and more resilient development.

Additionally, by updating the oceanfront and inlet erosion rates every five years, North Carolina will remain compliant with FEMA (Federal Emergency Management Administration) guidelines for the Community Rating System (CRS). Updating rates will ensure that property owners in coastal communities that participate in the National Flood Insurance Program are given fifty CRS points to maintain insurance rates at their current level. The loss of these points may increase insurance rates by up to five percent for some policyholders.

***V. Likelihood of Success***

The CRC has traditionally updated oceanfront erosion rates approximately every five years since 1980, and the last update was adopted in February 2013. Erosion rates are used to establish construction setbacks and delineate the Ocean Erodible and Inlet Hazard Areas of Environmental Concern, areas in which there is a substantial possibility of excessive shoreline erosion. Calculation of erosion rates is in the public interest because it helps to communicate some of the risk associated with erosion, and it allows communities to retain the applicable CRS credits that contribute to lower flood insurance premiums.

***VI. Strategy Work Plan***

**Total Years:** 5
**Total Budget:** $500,000
**Final Outcome(s) and Products:** The CMP will update the state's long-term annual oceanfront and inlet shoreline change rates and incorporate them into the CRC's rules.

**Year:** 1 (July 2021 – June 2022)
**Description of activities:**

- Evaluate current shoreline database to determine if all are suitable for use in a linear regression analysis. Considerations such as shoreline date (summer vs. winter and temporal span), historic storm data (avoid post-storm shorelines), data source and completeness, will be used collectively to define "suitable."
- Digitize new shorelines (wet/dry) using available imagery.
- Document the shoreline evaluation process and update metadata as necessary

**Outcome(s):**

- Updated oceanfront and inlet shoreline spatial database
- Updated shoreline metadata
- Shorelines identified for use in linear regression analysis
- Update DCM GIS data download page

**Budget:** $100,000

**Year:** 2 (July 2022 – June 2023)
**Description of activities:**

- Digitize new shorelines (wet/dry) using post-2016 imagery as needed or when available
- Update metadata associated with creation of any new spatial data as needed.
- Meet with the CRC's Science Panel to discuss transect spacing to determine if current spacing (50-meters) is still appropriate.
- Digitize new baselines should new transects need to be cast.
- Select a minimum of three locations in different geographic regions with varying erosion rates (low, medium, high) that will serve as case studies to evaluate linear regression compared to end-point shoreline change rates methodologies. Since the CMP believes that AMBUR (Analyzing Moving Boundaries Using R) is a better tool for analyzing shoreline change on curved shorelines (inlets and estuarine), the Division will also use it for analyzing oceanfront shorelines.

**Outcome(s):**

- Updated oceanfront and inlet shoreline database
- Updated shoreline metadata
- Defined oceanfront transects (continue using existing, or cast new transects)
- Document method and findings associated with case study
- Present case study results to Science Panel and CRC
- CRC adopt linear regression as an alternative methodology to end-point for calculating oceanfront shoreline change rates.

**Budget:** $100,000

**Year:** 3 (July 2023-June 2024)
**Description of activities:**

- Digitize new shorelines (wet/dry) using post-2016 imagery as needed or when available.
- Update metadata associated with creation of any new spatial data as needed.
- Calculate oceanfront shoreline change rates for all NC barrier islands
- Calculate oceanfront construction Setback Factors using new erosion rates.
- Document methodology and results (draft report)
- Document fiscal analysis associated with update of CRC Rule 15A NCAC 07H .0304

**Outcome(s):**

- Updated oceanfront and inlet shoreline database
- Updated shoreline metadata
- DCM data download page updated
- DCM interactive mapping website updated
- Draft oceanfront erosion rates calculated for all NC barrier islands presented to, and adopted by CRC
- Draft oceanfront erosion Setback Factors presented to, and adopted by CRC.

**Budget:** $100,000

**Year(s):** 4-5 (July 2024 – June 2026)

**Description of activities:**

- Present updated oceanfront and inlet erosion rate maps, construction Setback Factors, report, and fiscal analysis in each of NC's eight oceanfront counties (Brunswick, New Hanover, Pender, Onslow, Carteret, Hyde, Dare, and Currituck).
- Compile comments from all public hearings.
- Begin rulemaking, including fiscal analysis, to incorporate updated shoreline change rates into CRC's rules by reference.

**Outcome(s):**

- Present public comments to CRC.
- CRC adopt new oceanfront shoreline erosion rates and construction Setback Factors.

**Budget:** $200,000

***VII. Fiscal and Technical Needs***

**A. Fiscal Needs:** Federal Section 309 funds provided to support this program change will be sufficient for the efforts and projects proposed. No additional fiscal needs outside 309 funds are foreseen at this time.

**B. Technical Needs**: The CMP and CRC Science Panel possess the technical knowledge, skills, and equipment to carry out the proposed program change. No technical needs outside usual partners and stakeholders are foreseen at this time.

***VIII.*** **Projects of Special Merit (Optional)**

To be determined.

**Strategy Title: Coastal Hazards**

## Program Change 2: *Technical assistance program to support local resiliency efforts.*

***I. Issue Area***

The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy & Government Facility Siting
- ☒ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

***II. Program Change Description***

***A.*** The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☐ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☐ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☐ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☒ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

**B. Description:**

To most effectively build local resilience in coastal North Carolina, adaptive capacity must be increased at multiple scales—at the State agency and partner levels, and most importantly at the local government level.

Building coastal community resilience requires improvements in both the built and natural environments, but little work has been done at the local level to date on green infrastructure status and vulnerability assessment, linkages between green and gray infrastructure, protection and restoration needs, and making projects shovel ready. There has, however, been some research done and tools developed at the state and national levels that will be useful at the local level. For example, researchers at Duke University have mapped areas where natural coastal habitats have the greatest potential to provide flood protection, and overlaid those areas with information on where the protection is most needed, as a way to identify possible priority areas for habitat enhancement and restoration. The

Naturally Resilient Communities partnership has published a guide to help communities explore natural and nature-based approaches to building resilience, and to learn about what other communities have done.

The CMP created an online Coastal Adaptation and Resiliency dashboard, and a companion online Guide that provide links to climate data and forecasts, assessment and planning tools, adaptation examples, and sources of funding for planning and implementation. They are geared primarily towards local government staff, and designed to walk users through some of the key steps and questions required for effective community-level resiliency planning. They lay out a process for building resilience and climate change considerations into existing efforts such as comprehensive land use, hazard mitigation, or capital improvement planning, while also focusing on other co-beneficial strategies for risk reduction.

By combining frameworks developed for the natural and built environments, the state can adapt and build upon models used in other states for incentivizing communities to plan for long-term coastal resilience. The approach requires local communities to perform standardized vulnerability self-assessments, and involve residents in visioning and solution-seeking processes. Once they complete the requirements, communities would become eligible for subsequent funding for engineering and design, and construction and monitoring work. Since North Carolina does not currently have this framework in place, it will need to be created from the ground up; however, since there are several models in existence in other states, this can be done fairly quickly.

Examples of other state programs include Rhode Island's Resilient Rhody: Municipal Resilience Program, the Florida Resilient Coastlines Program, and the Massachusetts Municipal Vulnerability Preparedness (MVP) Program. Each of these programs incorporate the goals of building capacity, incentivizing and rewarding action, and producing coordinated, holistic, and continuous progress. The program will guide communities through a formal vulnerability assessment and planning process that supports communities in completing climate vulnerability assessments and creating actionable plans and prioritized project lists featuring natural and hybrid infrastructure enhancement and restoration. Since communities are at different stages of preparedness, the program will allow them to enter at the appropriate level and advance to the next phase.

The framework needs to be established at the intersection of coastal management and emergency management. As such, the CMP and NCORR will have the lead for program development. The CMP and the N.C. Department for Public Safety, NCORR's parent agency, have lead roles in local land use planning and hazard mitigation planning, respectively, and perform grant-making in support of these efforts. Staff at the CMP and NCORR have developed the capacity to provide direct technical assistance to local communities for vulnerability assessments and resilience planning, and have a history of successful collaboration. The CMP and NCORR also have a wide network of partners in the public and private sectors who provide technical expertise and manpower on an ongoing basis. Collectively, North Carolina has the institutional capacity to successfully design and administer this program.

### *III. Need(s) and Gap(s) Addressed*

The goal of local government capacity building is to ensure that all coastal communities attain a minimum level of planning, preparedness, risk assessment, and recovery capability, and are able to use

that capability to implement beneficial actions within their human and natural systems. Local and regional authorities generally lack the expertise and resources to identify, prioritize, and advance green or hybrid projects to shovel-ready status. Without a strategic framework and appropriate planning, project selection is haphazard, and runs the risk of serving short-term, isolated recovery needs but failing to increase institutional capacity or build system-wide resilience.

### *IV. Benefit(s) to Coastal Management*

There will be many benefits to coastal management from this strategy, that will persist long after this strategy period has ended. Benefits include:

- stronger and better-prepared communities with higher awareness of vulnerability and risk
- local shovel-ready projects, focused on green and green-grey infrastructure
- increased public engagement and hazards awareness, and participation in decision making
- reduced disruptions and property damage; less costly recovery and faster recovery times
- investment decisions based on future, not past conditions
- reduced threats to life and property

### *V. Likelihood of Success*

The CMP already has the legislative authority to create this program, and has the support of DEQ leadership. The CMP has worked closely with other state, local and private organizations on resilience building over the past four years, and has built lasting partnerships with organizations that are interested in collaborating on this project. NCORR, who would be the primary state partner, is fully engaged and participating in preliminary discussions about the program. The CMP believes that the likelihood of success for creating the program is very high, since we have the authority, stated interest, and models to build from.

### *VI. Strategy Work Plan*

**Total Years:** 5
**Total Budget:** $775,000
**Final Outcome(s) and Products:** The CMP will create a multi-phased technical assistance program to assist local communities with vulnerability assessments, planning and project prioritization, engineering and design, and construction when funding is available. A phased program could be sequenced as (1) Community Engagement and Vulnerability Assessment; followed by (2) Planning, Project Identification, and Prioritization; then (3) Engineering, Design & Permitting for construction readiness. When funding is available, advance to Phase (4) Construction, and Phase (5) Evaluation and Monitoring.

**Year:** 1 (July 2021 – June 2022)
**Description of activities:**

- Formalize the partnership between the CMP and NCORR (MOU or MOA)
- Build a management team comprised of key stakeholders
- Assess other state models to identify desired features

- Identify desired program elements and design a draft program framework, including longevity plan; circulate to subject matter experts for review

**Outcome(s):**

- Memorandum signed between the CMP and NCORR
- Management team formed
- Draft program framework developed and under review

**Budget:** $111,000

**Year:** 2 (July 2022 – June 2023)

**Description of activities:**

- Finalize program framework
- Announce program funding availability for vulnerability assessments, planning, and project prioritization under the CMP's existing Planning & Management Grants program
- Review applications and award contracts

**Outcome(s):**

- Program framework complete
- First round of planning grants announced and awarded

**Budget:** $401,000 ($151,000 309 funds, $250,000 state funds)

**Year:** 3 (July 2023-June 2024)

**Description of activities:**

- Evaluate year 2 activities and amend program as necessary
- Manage planning contracts; monitor and evaluate progress and results
- Announce program funding availability for vulnerability assessments, planning, project prioritization, and engineering & design under the CMP's existing Planning & Management Grants program
- Review applications and award contracts
- Communicate program status and successes

**Outcome(s):**

- Evaluation of year two activities complete
- First round of assessments and plans complete
- Second round of planning grants announced and awarded

**Budget:** $401,000 ($151,000 309 funds, $250,000 state funds)

**Year(s):** 4-5 (July 2024 – June 2026)

**Description of activities:**

- Continue annual program and project evaluations
- Continue to make program improvements as evaluations suggest
- Announce and award grants for vulnerability assessments, planning, project prioritization, and engineering & design as funding allows
- Communicate program status and successes

**Outcome(s):**

- Continuous program improvements and streamlining
- Second round of assessments and plans complete
- Shovel-ready projects created
- Applications submitted to state and national funding competitions for shovel-ready resilience/restoration projects

**Budget:** $362,000

***VII. Fiscal and Technical Needs***

**A. Fiscal Needs:** Federal Section 309 funds will be combined with $500,000 in State appropriations to complete the proposed Strategy. DCM and NCNERR staff, in partnership with NCORR, will accomplish this program change. No additional fiscal needs are foreseen at this time.

**B. Technical Needs**: DCM possesses the technical knowledge, skills, and equipment to carry out the proposed program change. No technical needs outside usual partners and stakeholders are foreseen at this time.

***VIII.*** **Projects of Special Merit (Optional)**

To be determined.

**Strategy Title: Aquaculture**

## Program Change 3: *Streamline aquaculture leasing review and permitting.*

***I. Issue Area***

The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☒ Aquaculture
- ☐ Energy & Government Facility Siting
- ☐ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

***II. Program Change Description***

***A.*** The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☒ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☐ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☐ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☐ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

**B. Description:**

The CMP will pursue program changes for shellfish aquaculture in order to remove unnecessary regulatory hurdles and barriers. The State of North Carolina has a long history with shellfish leasing, passing the first law to allow the use of public water bottom for private shellfish cultivation back in 1858. Commercial harvest great sharply after the Civil War to satisfy a strong national demand; the highest recorded harvest occurred in 1902, at over 800,000 bushels. Due to years of overharvest and some hurricane damage, stocks and harvest have declined ever since, and the average annual harvest today is about 100,000 bushels. Cultch planting began in 1915, and has had a mixed history of success due to shell and funding availability. DMF administers a shell recycling program to collect shell for reef restoration. Since 1996 the state has also created hundreds of acres of oyster sanctuaries to improve larval supply and connectivity between oyster reefs.

The CMP director sits on the steering committee for the North Carolina Oyster Blueprint, a diverse coalition of governmental and non-governmental organizations that has been collaborating since the early 2000s to promote oyster restoration, mariculture, and sustainable harvest in the state. Large-scale

restoration activities using material other than natural cultch are correctly routed through the major permit process due to the large area of impact, and the number of regulatory and resource management agencies with statutory responsibilities. Sustainable harvest is not within the CMP's purview, but the CMP can make program changes to improve the review and permitting of shellfish lease applications.

Traditional shell-on-bottom and spat-on-bottom methods do not involve the use of gear, structures, or activities that would be considered "development" under the Coastal Area Management Act (CAMA). These types of leases are typically marked using PVC poles, which the CMP does not consider development, and therefore does not require a CAMA permit. DMF now allows the use of weighted, anchored cages on bottom leases, provided they only rise a few inches above the bottom substrate. The CMP does not have a streamlined permitting mechanism for mariculture gear that could be regarded as having a negligible environmental or public trust impact, and may wish to create regulatory exemptions for those activities.

Water column lease allow the use of gear that occupies both the bottom substrate, and the entire water column. To date in North Carolina, this has generally meant oyster bags and cages suspended from, or tethered to, lines stretched between wooden pilings. CAMA includes "driving of pilings" in the definition of development, requiring a permit from the CMP. The CMP has interpreted "pilings" as being greater than a four-inch diameter, to allow for pilings four inches or less to be used without the requirement for a CAMA permit. Lines, bags, cages, anchors, and other gear used in the water column are not considered development. The CMP could consider a general permit (GP) for leases that use a limited amount of typical gear with moderate public trust impacts. As with other categories of development that the CMP has deemed appropriate for a GP, permitting becomes significantly faster and less expensive.

Certain types of mariculture gear are gaining in popularity, but either did not exist or were not used in North Carolina until very recently. Floating upweller (FLUPSY) and downweller systems and are floating platforms with cutouts for baskets to hold juvenile shellfish. Electric motors force water through the baskets, increasing the amount of nutrients available to the seed shellfish, and accelerating their growth until they are large enough to be transplanted to open water. These types of structures did not exist when the CMPs rules, and the CAMA provision governing floating structures were written. As a result, they are currently constrained by "floating structures" rules and legislation, which limits them to being permissible only in designated marinas. Given the need for electricity to run the motors, shellfish growers are more likely to want to install FLUPSYs along a shoreline with access to power, particularly at docks where there is ease of access, power, and the ability to secure the platform to a docking facility. Since the CMP considers FLUPSYs "floating structures", applicable rules require that they cannot remain in the same location for more than 30 days. The floating structures rule was put in place to prevent floating structures, not boats, from being used for long-term habitation. While floating platforms in an open-water lease are not intended for habitation, they are bound by the same rules. FLUPSYs can be permitted at private docks, but currently must go through the longer and more expensive major permit process. The CMP can pursue a program change to address the way FLUPSYs are treated under the floating structures rule, and to create a faster permitting process.

### *III. Need(s) and Gap(s) Addressed*

The need for this program change is to clarify the CMP's role in reviewing and permitting gear associated with aquaculture leases, and simplify the permitting process for applicants. This need was not apparent until the CMP started participating in reviews for aquaculture leases and receiving applications for FLUPSYs over the past few years.

Tasks that will be performed in pursuance of this program change include:

- Evaluate the types of gear and activities that require rule changes;
- Evaluate the types of gear and activities that would be appropriate for authorization under a permit;
- Create a simpler permitting process for FLUPSYs and other gear and activities;
- Coordinate with other state and federal agencies on spatial planning and suitability analyses.

***IV. Benefit(s) to Coastal Management***

The CMP wants to be supportive of efforts rebuild shellfish populations in state waters, including through shellfish aquaculture. By resolving newly-identified permitting issues, the CMP will become a facilitator to this growing industry that has both ecologic and economic benefits to the state.

***V. Likelihood of Success***

The program changes that the CMP is envisioning are entirely within the program's existing statutory authority, and do not require any legislative or external action in order to be successful. The State of North Carolina has stable interest and momentum around oyster restoration and shellfish mariculture, as evidenced by the triple-digit growth in leases over the past several years. The changes being contemplated are not controversial or complex, and therefore the CMP believes that the likelihood of success is very high.

***VI. Strategy Work Plan***

**Total Years:** 3
**Total Budget:** $130,000
**Final Outcome(s) and Products:** The CMP will propose amendments to the CRC's rules to categorize typical mariculture gear and practices into appropriate CAMA permit classes: exempt, general permit, or major permit. The CMP will also seek an appropriate resolution for FLUPSYs and other types of mariculture structures that may able to be moved into a more suitable permitting framework.

**Year:** 1 (July 2021 – June 2022)
**Description of activities:**

- Consult with the CRC and Coastal Resources Advisory Council to get clarity on the full scope of changes, and the specific parameters to be considered in the rule changes

- Convene a multi-organizational working group of regulators, resource managers, leaseholders and other key stakeholders, to begin discussing the proposed regulatory changes.
- Agree on a strategy and work plan

**Outcome(s):**

- CRC agreement on needed changes
- Working group formed
- Strategy and work plan developed

**Budget:** $70,000

**Year:** 2 (July 2022 – June 2023)
**Description of activities:**

- Draft initial rule changes with working group and seek CRC approval to begin rulemaking
- Perform fiscal analyses and hold public hearings

**Outcome(s):**

- Draft rules developed and presented to the CRC for approval
- Fiscal analyses completed
- Proposed rules published and public input collected

**Budget:** $30,000

**Year:** 3 (July 2023-June 2024)
**Description of activities:**

- Review public input, make further changes if necessary, present final rules to CRC
- Secure CRC approval on final rules
- Secure Rules Review Commission approval

**Outcome(s):**

- Final rules adopted by the CMP
- Rules approved by the Rules Review Commission and become effective

**Budget:** $30,000

***VII. Fiscal and Technical Needs***

**A. Fiscal Needs:** Federal Section 309 funds provided to support this program change will be sufficient for the efforts proposed. CMP staff will complete this program change. No additional fiscal needs outside 309 funds are foreseen at this time.

**B. Technical Needs**: DCM possesses the technical knowledge, skills, and equipment to carry out the proposed program change. No technical needs outside of external partners and stakeholders are foreseen at this time.

***VIII.*** **Projects of Special Merit (Optional)**

Not required.

**Strategy Title: Wetlands**

## Program Addition: *Thin Layer Placement*

**I.Issue Area(s)**

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy and Government Facility Siting
- ☐ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☒ Wetlands
- ☐ Marine Debris
- ☐ Public Access

**II. Strategy Description**

**A.** The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

☐ A change to coastal zone boundaries;

☐ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;

☐ New or revised local coastal programs and implementing ordinances;

☐ New or revised coastal land acquisition, management, and restoration programs;

☐ New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,

☒ New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

**B. *Description***

The NCCMP places a high value on coastal wetlands due to their ecosystem and resilience services. While coastal wetlands are protected by law and regulation in North Carolina, coastal wetlands still experience losses due to erosion and drowning due to sea level rise. Coastal wetlands are lost by short term processes such as erosion by storms, boat wakes, and tidal currents. Coastal wetlands can also be drowned by the longer-term process of rising sea level if the rate of sediment accretion to the marsh does not keep up with the rate of sea level rise. Sea level rise is frequently cited as both a direct stressor on coastal wetlands and as a force that magnifies other stresses. Ongoing monitoring by scientists at the NOAA NCCOS Beaufort Laboratory is providing useful data on the relative rates of marsh elevation and sea level changes.

Thin-layer placement (TLP) is an emerging technique in North Carolina for the purpose of coastal wetland restoration or as an enhancement strategy. TLP is when material (dredged sediment) is intentionally placed on a wetland to increase its elevation while maintaining the hydrology and inundation duration necessary for native wetland vegetation to persist. Traditionally, dredged material from routine navigational channel maintenance is placed in an

approved upland or submarine disposal area. TLP would allow for this material to be beneficially used by increasing wetland elevation in areas that are not naturally accreting quickly enough to counter sea level rise.

In 2022, the NCCMP published a guidance document regarding TLP, highlighting site assessment protocols and monitoring plans that are important for project scoping, interagency permitting reviews, and future outcome evaluations (https://www.deq.nc.gov/nc-thin-layer-project-guidance/open). The document explains that TLP projects should establish quantitative objectives, assess the suitability of the site, and develop a monitoring plan with success criteria before proceeding. Additionally, the 2022 guidance document recommends that TLP should be considered only if the likelihood of wetland restoration success is high, and that project's primary purpose should be to restore or enhance a degraded marsh, not simply for the convenient disposal of dredged material.

The NCCMP is adding this strategy amendment to focus on TLP and coastal wetlands resiliency. The NCCMP will work with partners to devise a strategy and protocol to map areas within North Carolina where coastal wetlands are at risk of drowning and may be suitable candidate sites for TLP. Mapping suitable areas where TLP is appropriate will aid the NCCMP in working with permit applicants to increase the number of permitted TLP projects and will contribute to the success of coastal wetland restoration. This suitability mapping initiative will be included as an addendum to the 2022 guidance document for TLP projects, and over time may provide supporting data to justify a program change to allow direct permitting.

## III. Needs and Gaps Addressed

The need for this program change is to apply the best management practices for the success of TLP projects. Currently, the NCCMP does not have spatial data to support siting decisions for TLP projects, such as marsh health, threats, and likelihood of TLP success. In addition, the NCCMP's rules do not allow filling of coastal wetlands through direct permitting. If an application is submitted to use TLP, that application will be denied, and the applicant has the option to apply for a variance from the Coastal Resources Commission. Mapping suitable areas for TLP as an addendum to the 2022 guidance document will aid in permit review of TLP projects through a variance.

## IV. Benefits to Coastal Management

This program change is intended to allow for more TLP projects in North Carolina, that restore and enhance existing coastal wetlands, and allow for beneficial use of good quality dredged material. As discussed, coastal wetlands are important for their ecosystem services and resilience benefits. Studies have shown that TLP may be an effective way to restore coastal wetlands and improve their resilience to sea level rise, which in turn provides socioeconomic and ecological benefits to adjacent communities.

## V. Likelihood of Success

Since this additional strategy is solely a NCCMP goal, NCCMP will not have to rely on outside partners or other government agencies to accomplish this program change. Therefore, NCCMP believes that the likelihood of success is very high. The NCCMP will use existing funding under its NOAA Cooperative agreements to provide staffing for this strategy.

## VI. Strategy Work Plan

**Total Years:** 2.5
**Total Budget: $**257,500
**Final Outcome(s) and Products:** The NCCMP will map suitable areas where TLP is most needed and likely to succeed and add the results as an addendum to our 2022 TLP Guidance document. The CMP will hire a permanent full-time employee (Coastal Wetland Specialist) to implement the strategy.

**Year:** 1 (December 2023-June 2024)
**Description of activities:**

- Coastal Wetland Specialist will create a technical working group and hold stakeholder meetings focused on TLP and proper techniques to map at risk coastal wetlands.

**Outcome(s):**

- Technical Work Group formed
- Stakeholder meetings conducted
- Strategy and work plan developed

**Budget:** $51,500

Funding is coming from Task 3 – Technical Assistance Program to Support Local Resiliency Efforts. Under this task is $66,915 budgeted under "Contractual" for a Coastal Resilience Specialist.

**Year:** 2 (July 2024-June 2025)
**Description of activities:**

- Finalize appropriate mapping methodologies
- Prioritize areas of coastal wetlands that will be mapped

**Outcome(s):**

- Begin mapping coastal wetlands areas that have been prioritized

**Budget:** $103,000 ($65,000 2022 309)

Of the $65k - $58,500 is budgeted on Task 1 – Administration of the Strategic Planning Program under "Contractual" for a Strategic Planning Fellowship. The remaining funds are coming from multiple tasks and is savings from Travel, Supplies, Other, etc…

**Year:** 2.5 (July 2025-June 2026)
**Description of activities:**

- Add additional information including mapped suitable areas for TLP to the 2022 guidance document

**Outcome(s):**

- Publish addendum to the 2022 guidance document

**Budget:** $103,000 ($29,250 309 funds)

$29,250 budgeted on Task 1 – Administration of the Strategic Planning Program under "Contractual" for a Strategic Planning

**VII. Fiscal and Technical Needs**

**A. Fiscal Needs: If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.**

The CMP has sufficient supplementary funding available under our Section 306 Cooperative Agreements. The combination of 306 and 309 funding will be able to sustain this position for the duration of the strategy period.

**B. Technical Needs: If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).**

The CMP has cooperative relationships with NOAA wetlands ecologists at the NOAA NCCOS Beaufort Laboratory, and with scientists at the U.S. Fish and Wildlife Service, as well as the U.S. Geological Survey. The CMP will be using data from surface elevation tables, LiDAR, and aerial imagery, and exploring tools like USGS' Unvegetated to Vegetated Ratio (UVVR) decision support tool.

## V. 5-YEAR BUDGET SUMMARY

### *5-Year Budget Summary by Strategy*

At the end of the strategy section, please include the following budget table summarizing your anticipated Section 309 expenses by strategy for each year. Generally, CMPs should only develop strategies for activities that the state intends to fund and work on given their anticipated level of Section 309 funding. However, in some circumstances, CMPs may wish to use the assessment and strategy development process as a broader strategic planning effort for the CMP. In that case, the CMP may elect to include additional strategies that exceed the state's anticipated Section 309 funding over the five- year period. If the CMP chooses this approach, it should still clearly indicate which strategies it anticipates supporting with Section 309 funding and which strategies it anticipates supporting through other funding sources.

| Strategy Title | Anticipated Funding Source (309 or Other) | Year 1 Funding | Year 2 Funding | Year 3 Funding | Year 4 Funding | Year 5 Funding | Total Funding |
|---|---|---|---|---|---|---|---|
| Combined delineation of barrier island erosion hazards | 309 | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 | 500,000 |
| Technical assistance program to support local resiliency efforts | 309 | 59,500 | 86,000 | 151,000 | 181,000 | 181,000 | 658,500 |
| Technical assistance program to support local resiliency efforts | State | - | 250,000 | 250,000 | - | - | 500,000 |
| Streamline aquaculture leasing review and Permitting | 309 | 70,000 | 30,000 | 30,000 | - | - | 130,000 |
| Administration | 309 | 100,000 | 100,000 | 100,000 | 100,000 | 70,750 | 470,750 |
| Wetlands | 309 | 51,500 | 65,000 | - | - | 29,250 | 171,500 |
| Wetlands | 306 and State | - | 38,000 | - | - | 73,750 | 86,000 |
| **Total Funding** | - | 381,000 | 669,000 | 631,000 | 381,000 | 454,750 | 2,516,750 |

## VI. SUMMARY OF STAKEHOLDER AND PUBLIC COMMENT

The NCCMP conducted an online stakeholder survey in September-October 2019 to invite input on potential 2021-2025 enhancement areas. The survey asked which enhancement area(s) stakeholders thought should be high priorities for program changes, and what types of program changes they would recommend. The CMP also invited public comments in March-April 2020 on the draft Assessment & Strategy. Completed surveys and public input were received from individuals affiliated with the following groups:

- Audubon NC
- Pew Charitable Trusts
- NC Coastal Federation
- NC Sea Grant
- NC Sierra Club
- Private citizens/unaffiliated

From highest to lowest, the list below shows the percentage of stakeholders who ranked the nine enhancement areas as high priority:

| | | |
|---|---|---|
| 1. | Wetlands | 89% |
| 2. | Coastal Hazards | 75% |
| 3. | Public Access | 50% |
| 4. | Marine Debris | 63% |
| 5. | Cumulative & Secondary Impacts | 50% |
| 6. | Special Area Management Plans | 25% |
| 7. | Ocean Resources | 50% |
| 8. | Energy & Government Facility Siting | 25% |
| 9. | Aquaculture | 38% |

The majority of the feedback encouraged the CMP to adopt Wetlands and Coastal Hazards as high priority enhancement areas, but did not contain many specific recommendations for potential program enhancements. As a result of the stakeholder and public input, the CMP elevated Wetlands from medium to high priority, but for reasons explained in the Assessment, is not proposing a Strategy in this area. The complete record of stakeholder input and public comment is attached.

# N.C. Division of Coastal Management 2021-2025 Strategic Priorities Assessment Survey

Name: * Leda Cunningham

Affiliation: * Pew Charitable Trusts

County of Residence: * Carteret

Email address:

Do you believe that Wetlands should be a top priority over the next five years? *

- (•) Yes
- ( ) No

*North Carolina has just over 200,000 acres of estuarine salt marsh (including both low and high marsh). This tidal wetland habitat is critical for the state's wildlife resources (as key habitat for fish, crabs, shrimp, birds, etc.) and also provides important ecosystem services like buffering against damaging waves, preventing shoreline erosion, absorbing flood waters, and filtering water. Approximately 70% of salt marsh has declined nationally due to development, agriculture, water diversion from dams and culverts, and associated loss of alluvial sediment. Severe storms and rising seas are exacerbating the loss, causing remaining salt marsh habitat to die and be replaced by open water, particularly in areas where they face both natural and human stressors on seaward and landward edges, also known as "coastal squeeze." Pew recommends the development of specific strategies related to salt marsh, sea level rise and coastal squeeze; for example, using tools like Special Area Management Plans to identify areas where marsh migration corridors can be created to facilitate their survival and protect coastal communities; and facilitating restoration approaches to maintain existing salt marsh.*

Do you believe that Coastal Hazards should be a top priority over the next five years? *

- (•) Yes
- ( ) No

*We recommend the Division of Coastal Management develop a coastal habitat conservation and restoration strategy to address coastal hazards as part of its upcoming 309 update. This strategy could include a series of mutually-reinforcing activities, such as addressing salt marsh*

*protection and restoration in the face of sea level rise (described above under "wetlands"), advancing oyster reef restoration, and developing and implementing best practices for low impact development. Specific strategies could be developed to advance oyster reef restoration as a key component of coastal protection on private lands (e.g., through more widespread use of living shorelines) and public lands. This could include strategies to address current obstacles to adoption of living shorelines, such as limited homeowner and contractor awareness. For example, the Commonwealth of Virginia's CZM program supported the Virginia Institute of Marine Science to provide training for contractors and homeowners on living shoreline creation and permitting. This work could also include partnering with the Department of Defense to create new oyster reefs on or adjacent to military installations. We also recommend that the Division consider the use of tools like Special Area Management Plans that could facilitate spatial-level planning to help communities incorporate habitat conservation and restoration approaches into disaster mitigation. We highlight Rhode Island's Shoreline Change special area management plan as an example.*

Do you believe that Public Access should be a top priority over the next five years? *

- ○ Yes
- ◉ No

Do you believe that Marine Debris should be a top priority over the next five years? *

- ○ Yes
- ◉ No

Do you believe that Cumulative & Secondary Impacts should be a top priority over the next five years? *

- ○ Yes
- ◉ No

Do you believe that Special Area Management Planning should be a top priority over the next five years? *

- ○ Yes
- ◉ No

Do you believe that Ocean Resources should be a top priority over the next five years? *

- ◉ Yes
- ○ No

*We recommend the Division of Coastal Management identify opportunities to work with partner agencies to develop management strategies specifically related to North Carolina's sea grass and other Submerged Aquatic Vegetation (SAV) habitat. Greater management attention to this ocean resource could yield multiple benefits, including enhancing its sediment binding and wave-attenuating properties that help reduce erosion and buffer the coast against storms; as well as conserving its function as nursery, feeding grounds, and refuge for juveniles of species important to North Carolina's fisheries, such as blue crab, gag grouper, and red drum.*

*Specific strategies could include more assessments of the acreage and extent of SAV; identification of vulnerable areas; and prioritization of areas for mapping, monitoring, restoration and water quality related interventions. We also would like to highlight Virginia's Coastal Management Program's funding of highly successful seagrass restoration efforts in the seaside bays, and some of the tools, like Special Area Management Plans, deployed to facilitate this restoration, as a potential example.*

Do you believe that Energy & Government Facility Siting should be a top priority over the next five years? *

- ○ Yes
- ◉ No

Do you believe that Aquaculture should be a top priority over the next five years? *

- ○ Yes
- ◉ No

**Name: Erin Carey**
**Affiliation: NC Sierra Club**
**County of Residence: New Hanover**
**Email address:** erin.carey@sierraclub.org

1. Do you believe that **Wetlands** should be a top priority over the next five years? Yes
*Because wetlands play a critical role in coastal resilience and the health of fisheries the division should prioritize the conservation and protection of existing wetlands. The current system of allowing for the destruction of established and stable wetland ecosystems through mitigation fails to adequately protect and utilize these systems in their natural capacity.*

2. Do you believe that **Coastal Hazards** should be a top priority over the next five years?
*The Sierra Club recognizes the benefits and significance of a managed retreat and the economic impacts of structures and infrastructure left subject to sea level rise and flooding but takes no official position on this priority.*

3. Do you believe that **Public Access** should be a top priority over the next five years? No

4. Do you believe that **Marine Debris** should be a top priority over the next five years?
*The persistent crisis of plastic in the marine environment is reason alone to prioritize the management of marine debris. DCM could prohibit the distribution of single use plastics by coastal businesses, launch a public education campaign on the dangers of plastics in the ocean and enforce littering laws on beaches.*

5. Do you believe that **Cumulative & Secondary Impacts** should be a top priority over the next five years? Yes
*Cumulative and secondary impact considerations in the future should include the required managed retreat or resilient reconstruction of infrastructure in areas repeatedly impacted by storms and/or flooding. The taxpayers should not continue to bear the financial brunt of ill-considered development nor should natural systems continued to be altered and destroyed to make way for such development.*

6. Do you believe that **Special Area Management Planning** should be a top priority over the next five years? No

7. Do you believe that **Ocean Resources** should be a top priority over the next five years? Yes
*No comment*

8. Do you believe that **Energy & Government Facility Siting** should be a top priority over the next five years? Yes
*The Division should continue to promote clean energy options and maintain a hard line on consistency requirements for fossil fuel interests that seek access to offshore oil and gas resources.*

9. Do you believe that **Aquaculture** should be a top priority over the next five years? Yes
*No comment*

**Name: Bill Raney**
**Affiliation: Interested Citizen**
**County of Residence: New Hanover**
**Email address: waraney@bellsouth.net**

1. Do you believe that Wetlands should be a top priority over the next five years? Yes No
Continue enforcement of current rules and encourage shoreline protection measures other than vertical bulkheads.

2. Do you believe that Coastal Hazards should be a top priority over the next five years? Yes No
Encourage legislation and rules in other agencies such as the Real Estate Commission that require buyers to be made aware of coastal hazards before contracting to buy property in coastal hazard areas.

3. Do you believe that Public Access should be a top priority over the next five years? Yes No
Keep doing what you are now doing and encourage funding for local governments to provide more parking for access points.

4. Do you believe that Marine Debris should be a top priority over the next five years? Yes No
Support legislation that allows local governments to enact ordinances that allow removal or derelict and abandoned vessels and to sell any vessels with value to cover the cost of removal. Support funding of vessel removal through boat additional personal property tax by local governments on vessels over 20'.

5. Do you believe that Cumulative & Secondary Impacts should be a top priority over the next five years? Yes No
Support existing rules that allow consideration of cumulative and secondary impacts and pursue statutory authorization if necessary to allow such consideration in permitting decisions.

6. Do you believe that Special Area Management Planning should be a top priority over the next five years? Yes No
No opinion.

7. Do you believe that Ocean Resources should be a top priority over the next five years? Yes No
Continue opposition to offshore drilling and strengthen State rules for permitting onshore and near shore development that comes from offshore development.

8. Do you believe that Energy & Government Facility Siting should be a top priority over the next five years? Yes No
For energy see 7 above. For government facilities apply the same standards as for private development.

9. Do you believe that Aquaculture should be a top priority over the next five years? Yes No

Aquaculture should be encouraged but only if it can be accomplished without adverse effects on navigation and water quality. The existing program for establishment of oyster sanctuaries and new oyster production in currently non-producing areas should continue.

**Name: Gloria Putnam**
**Affiliation: NC Sea Grant**
**County of Residence: Wake**
**Email address: gloria_putnam@gmail.com**

1. Do you believe that Wetlands should be a top priority over the next five years? Yes
If it is not being done now, determine if regulations for the estuarine shoreline need modification to allow marsh migration or protect overall marsh health.

2. Do you believe that Coastal Hazards should be a top priority over the next five years? Yes

3. Do you believe that Public Access should be a top priority over the next five years? Yes

4. Do you believe that Marine Debris should be a top priority over the next five years? Yes
Expand or modify the Clean Marina position to full-time with responsibilities of reviewing and revising policies that could have significant impacts on marine debris reduction at the state and local level from all sources and in particular construction / building materials, plastics, vessels and aquaculture.

5. Do you believe that Cumulative & Secondary Impacts should be a top priority over the next five years? Yes
DCM should first periodically assess and make public the direct impacts of new development and support methods or actions to at the minimum identify the probable or associated range of cumulative and secondary impacts (within the AECs).

6. Do you believe that Special Area Management Planning should be a top priority over the next five years? Yes
Specials area management plans should be created to protect coastal areas that contain the highest quality coastal resources. This should include both water and land based activities and some activities could be coordinated with DWR or infrastructure programs to include true green infrastructure strategies for water quality, wildlife and resiliency.

7. Do you believe that Ocean Resources should be a top priority over the next five years? unsure

8. Do you believe that Energy & Government Facility Siting should be a top priority over the next five years? Unsure

9. Do you believe that Aquaculture should be a top priority over the next five years? Unsure

**Name: Paul Cough**
**Affiliation: none**
**County of Residence: Orange**
**Email address: paulcough@gmail.com**

1. Do you believe that **Wetlands** should be a top priority over the next five years? Yes
*I learned about this survey too late to prepare a thorough response by the deadline. But a quick answer: Ensure that the ecosystem services provided by coastal wetlands (especially resilience, net carbon sequestration (including methane), habitat and water filtration) are quantified and factored into DCM decision making.*

*2.* Do you believe that **Coastal Hazards** should be a top priority over the next five years? Yes
*Facilitate greater use of living shorelines and beneficial use of clean material from navigational dredging.*

3. Do you believe that **Public Access** should be a top priority over the next five years? No

4. Do you believe that **Marine Debris** should be a top priority over the next five years? No

5. Do you believe that **Cumulative & Secondary Impacts** should be a top priority over the next five years? No

6. Do you believe that **Special Area Management Planning** should be a top priority over the next five years? No

*7.* Do you believe that **Ocean Resources** should be a top priority over the next five years? Yes
*Assess the hypothesis that seagrasses play a critical role in the long-term survival of the barrier island system, especially in light of sea level rise, and factor into decision making as appropriate, e.g., seagrass resilience benefits.*

8. Do you believe that **Energy & Government Facility Siting** should be a top priority over the next five years? No

9. Do you believe that **Aquaculture** should be a top priority over the next five years? No

**Name: Cat Bowler**
**Affiliation: Audubon North Carolina**
**County of Residence: Wake**
**Email address: cat.bowler@audubon.org**

1. Do you believe that **Wetlands** should be a top priority over the next five years? Yes
*Continue to collect data for and update the Wetlands Interactive Mapping tool; assess primary drivers of wetlands loss in coastal counties, as well as near-term mitigation and restoration opportunities.*

*2.* Do you believe that **Coastal Hazards** should be a top priority over the next five years? Yes
*Integrate sea level rise and other climate change impacts into permitting consideration process for development activities in high-risk areas.*

*3.* Do you believe that **Public Access** should be a top priority over the next five years? Yes
*Explore the utility of a mobile public access guide to encourage safe recreation and engagement with coastal cultural and historic resources.*

4. Do you believe that **Marine Debris** should be a top priority over the next five years? Yes
*Continue supporting, monitoring, and enhancing existing marine debris programs.*

5. Do you believe that **Cumulative & Secondary Impacts** should be a top priority over the next five years? Yes
*Review state-led management plans, provide progress updates to the public, and identify opportunities to streamline planning objectives.*

6. Do you believe that **Special Area Management Planning** should be a top priority over the next five years? No

7. Do you believe that **Ocean Resources** should be a top priority over the next five years? No

8. Do you believe that **Energy & Government Facility Siting** should be a top priority over the next five years? No

9. Do you believe that **Aquaculture** should be a top priority over the next five years? No

**Fri 4/24/2020 11:24 AM**

**From: Vicki Myers <vymyers@gmail.com>**

**Subject: [External] Draft Assessment and Strategy of the NC Coastal Management Program**

**To: Miller, Tancred tancred.miller@ncdenr.gov**

To Whom it May Concern,

I am writing to express my concerns about the proposed Program Enhancement Strategy - Coastal Hazards. The proposed changes are vague, but it sounds like you would like to apply your Inlet Hazard Area Method (IHAM) to all coastal shorelines.

My island has a robust shoreline management plan. We continuously monitor the oceanfront as well as both inlets for changes in the shoreline, including completing annual surveys. We do nourishment projects almost every year somewhere on the island. In 2017 we completed a Town-funded 1.3 million cubic yard nourishment project and are in the planning stages of a ~$40,000,000 FEMA project for losses suffered in Florence, Michael and Dorian. We also budget each year for additional sand fencing and plantings, public dune crossovers and follow other best practices for dune enhancement and protection. We have demonstrated a long-term commitment to our shorelines.

Our shoreline varies continuously as nourishments equilibrate. Application of the IHAM method would penalize my island for the proactive actions we have taken because IHAM measures variability - not growth or loss.

Please re-think what it is you are trying to accomplish and your analysis method. What you have described will not work for a managed beach.

Best Regards,

Vicki Y. Myers

Holden Beach, NC

North Carolina Coastal Federation
*Working Together for a Healthy Coast*

April 17, 2020

Tancred Miller
N.C. Division of Coastal Management
400 Commerce Av.
Morehead City, NC 28570

**RE: Assessment and Strategy of the North Carolina Coastal Management Program; FY 2021-2025**

Dear Mr. Miller:

Please accept the following comments on the proposed Assessment and Strategy of the North Carolina Coastal Management Program 2021-2025 on behalf of the North Carolina Coastal Federation.

The Coastal Federation is a non-profit organization dedicated to protecting and restoring the North Carolina coast. Our organization represents 16,000 supporters statewide and works with the public, state and federal agencies and local governments to communicate and collaborate towards solutions that lead to the stewardship and resiliency of our coast. Since 1982, the federation has been working with coastal communities and other partners to protect and restore coastal water quality, natural habitats, and public beach access, which are intricately tied to our coastal economy. We strive to support and enhance the natural coastal environment. In doing so, we continue to promote stronger and more resilient coastal communities.

## 1. Wetlands:

**From Assessment:**
*While the program remains a strong interest in the status and protection of coastal wetlands,* ***no regulatory changes are seen as necessary in this period*** *(emphasis added). The program accomplished a significant program change during the 2016-2020 period, amending our General Permit for living shorelines and coordinating with USACE on their new Regional General Permit. Permitting for marsh sills is now the quickest in the nation, and these structures will allow for both marsh restoration and shoreline protection. In addition, the program will continue to offer educational and training events to promote the use of living shorelines and will continue to conduct and support marsh monitoring and restoration research. All stakeholders recommended that wetlands be a high priority, suggesting for example the creation of special area management plans to identify marsh migration corridors. This is a very timely recommendation, and the program may consider a Project of Special Merit application in the future to investigate*

*opportunities to integrate migration areas into the state's "Areas of Environmental Concern" system.*

**Discussion:**
The Section 309 Enhancement Objective is to protect, restore, and enhance the existing coastal wetland base, or create new wetlands. National Oceanic and Atmospheric Administration (NOAA) defines wetlands using the existing definition that is used by the U.S. Environmental Protection Agency (EPA)/ U.S. Corps of Engineers for Section 404 jurisdiction under the federal Clean Water Act (CWA).

The N.C. coastal program does not use the same definition of wetlands. Its regulatory jurisdiction is narrowly defined as "coastal" wetlands. This definition, adopted by the N.C. Coastal Resources Commission, applies only to species of salt marsh that are regularly flooded by the tide. Invasive species, such as phragmites, are not listed as a coastal wetland species by the Commission, and therefore marshes that are dominated by this plant are not protected by the state's coastal program. Most freshwater wetlands are not regulated by the state's program, but rather fall under the jurisdiction of the N.C. Environmental Management Commission and the N.C. Division of Water Quality that issues 401 certifications.

The wetland change statistics in the assessment are aggregated to county levels and include the wetland restoration activities that have been undertaken under the federal Farm Bill using conservation programs administered by the Natural Resources Conservation Service (NRCS). In addition, federal, state and non-profit landowners have restored wetlands with their own funds, and through grants obtain from various federal and state funds. Within the assessment period, more than 10,000 acres of wetlands previously classified as "prior converted cropland" have been restored. Much of this restoration activity has occurred in Carteret, Hyde, Tyrrell, and Dare counties. These large acreage wetland restoration projects are concentrated in a handful of small hydrologic watersheds (12 digits), especially those watersheds that drain directly into sensitive coastal habitats where salinity, sediment, nutrients and bacteria pose major problems to water quality. <u>It would be much more meaningful to present the wetland change figure by hydrologic unit rather than at the county level. Loss or gain of wetlands within these 12-digit hydrologic watersheds has a direct effect on the health and productivity of the receiving coastal waters</u>.

In addition to providing a more accurate assessment of wetland changes at a more meaningful hydrologic scale, there is a big opportunity for the program to help landowners obtain more federal and state resources to restore and conserve wetlands. <u>It can assist in the development of watershed restoration plans at the 12-digit hydrologic unit level that identify and prioritize wetlands for restoration to achieve water quality and habitat enhancement goals</u>. These plans are required for communities to be eligible for Section 319 funding under the CWA for projects that address "impaired" water quality and are also helpful with many other funding agencies to demonstrate that proposed restoration activities will indeed be cost-effective.

The assessment does not address the implication of the new rules being proposed by the EPA relating to the waters of the United States. These new rules will greatly reduce the number of freshwater wetlands within the coastal zone that fall under Section 404 jurisdiction of the federal CWA. The rules will remove most pocosins and other palustrine wetlands that are not adjacent to navigable waters from the 404 regulation. The implication of this change will have dramatic consequences since without this federal protection these wetlands are likely to be converted to other land uses for agriculture, forestry and urbanization. The resulting implication for coastal water quality and the productivity of the coast's estuarine system is grave. The State of N.C. is formally objecting to this pending rule change, and the coastal program needs to acknowledge the serious implications of the proposed rules. The program should place a priority on building a strong case for the federal rules to be projected (inconsistency with the state's federally approved coastal plan, etc.). If they do take effect, the program should work on advancing potential state policies and rules to compensate for the federal retreat on wetland protections.

Wetlands should be a "High" Priority for this program.

**2. Coastal Hazards**

**From Assessment:**
*The goal of local government capacity building is to ensure that all coastal communities attain a minimum level of planning, preparedness, risk assessment, and recovery capability, and are able to use that capability to implement beneficial actions within their human and natural systems. Local and regional authorities generally lack the expertise and resources to identify, prioritize, and advance green or hybrid projects to shovel-ready status. Without a strategic framework and appropriate planning, project selection is haphazard, and runs the risk of serving short-term, isolated recovery needs but failing to increase institutional capacity or build system-wide resilience.*

**Discussion:**
This program area is a major focus on the program and is projected to use approximately 40% of the programmatic (non-administration) funding from the Section 309. While it is a large percentage of the state programs budget, achieving the program's coastal hazards goal (building capacity of local governments) is an enormous task since the coastal region includes 20 county governments and approximately 100 municipalities.

<u>This focus area needs to prioritize nature-based strategies that will work to make coastal communities more resilient while also achieving the fundamental goals of the N.C. coastal plan (which are aimed at perpetuating a healthy and productive environment and coastal economy)</u>. It should identify <u>a few important priority nature-based strategies</u> to promote including the use of living shorelines, watershed management and restoration plans, stronger construction standards for water dependent structures (such as docks) so they aren't destroyed in storms and become hazardous waste as marine debris, and buyouts of flood prone properties using

federal disaster recovery funding (with an emphasis on restoring these acquired properties to enhance natural buffers from storms that also serve to improve environmental quality).

The program should also include working with other state agencies to enhance resiliency. For example, N.C. Department of Transportation is promoting the use of living shorelines to protect its transportation infrastructure, and the program should seek to work out agreements that expedite and encourage such practices. The relationship with N.C. Office of Recovery and Resiliency (NCORR) anticipated in by the program needs to seek to increase the amount of recovery funding that is available to nature-based infrastructure and that will reduce the vulnerability of community infrastructure to coastal hazards (almost no funding is currently being spent by NCORR for these purposes).

**3. Aquaculture**

**From Assessment:**
*The need for this program change is to clarify the CMP's role in reviewing and permitting gear associated with aquaculture leases and simplify the permitting process for applicants. This need was not apparent until the CMP started participating in reviews for aquaculture leases and receiving applications for FLUPSYs over the past few years.*
*Tasks that will be performed in pursuance of this program change include:*

- *Evaluate the types of gear and activities that require rule changes;*
- *Evaluate the types of gear and activities that would be appropriate for authorization under a permit;*
- *Create a simpler permitting process for FLUPSYs and other gear and activities;*
- *Coordinate with other state and federal agencies on spatial planning and suitability analyses.*

**Discussion:**
These are all important tasks and the program is correct in placing a high priority on making these program adjustments. However, it should also include the need to look at its policies and rules for "floating structures," and to take any necessary adjustments to address the need for temporary work platforms on lease sites.

The use of special area management plans should be explored to increase the protection of priority shellfish growing waters in the state. There are a number of important shellfish growing areas that are experiencing declining water quality that is causing more frequent closures of these waters to harvest. The culprit is typically hydrologic modification of the landscape within the 12-digit watershed adjacent to these waters. These modifications result in higher volumes and rates of runoff that carries bacteria, nutrients and sediment into the receiving waters. The Oyster Steering Committee has identified Stump Sound and Newport River as the two most endangered shellfish growing waters along the coast and is seeking the development of watershed management and restoration strategies for both of these areas. In addition, the Steering Committee is in the process of prioritizing other growing areas that are also becoming

endangered. The Program should place a high priority on working with the Steering Committee to protect these waters so as to safeguard not only the shellfish mariculture industry, but water quality and productivity of these estuaries for fisheries and recreation.

**Marine Debris**

The Plan needs to add an important priority area of Marine Debris. Marine debris has become a major problem for the N.C. coast. It poses hazards, pollutes the water and interferes with coastal habitat. In recent years generous state and federal funds were dedicated to cleaning up the coast after the recent storms. The North Carolina Coastal Federation and its partners' efforts removed 200.3 tons of marine debris from over 43 miles of coastline impacted by Hurricane Florence. Debris was removed from the estuaries of Carteret, Onslow and Pender counties, including from state park property and other publicly owned shorelines and islands. However, a lot of work remains to be done to clean the coast of litter and abandoned boats.

The program recently helped to develop the **North Carolina Marine Debris Action Plan** that includes a number of tangible steps that need to be taken over the next five years to both prevent and remove marine debris along the coast. The plan also calls for the development of a new public awareness and education strategy that will use existing resources to target key audiences that can help reduce marine debris. The plan also seeks to obtain better construction practices in order to reduce storm damage to structures built near or on the water, including docks. During recent hurricanes, many docks and other structures located in areas subject to storm surges were destroyed. The chemically treated wood from these damaged structures were a major source of hazardous marine waste in saltmarshes, estuarine shorelines and waterways. Some of this debris caused significant property damage to downdrift properties as it washed ashore and became battering rams that knocked down trees, houses and other buildings.

Because this is such a significant problem, the Division received significant funding from the N.C. General Assembly and the Natural Resources Conservation Service (through the Emergency Watershed Program) in the past two years to fund removal of marine storm debris caused by Hurricane Florence, including abandoned boats.

The Coastal Management Plan needs to incorporate actions in the now adopted Marine Debris Action Plan and include them as important priorities for the next five years.

Thank you for taking our comments under consideration.

Sincerely,

Todd Miller
Executive Director